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1 May 1980

# Worldwide Report

ENVIRONMENTAL QUALITY

No. 251



FOREIGN BROADCAST INFORMATION SERVICE

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WORLDWIDE REPORT  
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NORDIC COUNTRIES STUDY AIRBORNE POLLUTION FROM POLAND, GDR

Copenhagen BERLINGSKE AFTEN in Danish 21 Mar 80 p 14

[Article by Kirsten Mikkelsen: "Lolland and Falster Heavily Polluted from East Germany and Poland"]

[Text] Pollution is being brought by the wind from countries located to the east, where no environmental-protection requirements are placed on industry, as is the case in the Nordic countries. Studies reveal an accumulation of heavy metals, including cadmium and lead, which is 50 percent larger in the southeastern part of Denmark than in North Jutland. Heavy metals are poisonous, and they affect humans, animals and the natural cycle.

Air pollution from East Germany and Poland is being brought by the wind over the southeastern part of Denmark to an extent which has been unknown up to now. New scientific studies show that Lolland and Falster are 50 percent more polluted with poisonous heavy metals, including cadmium and lead, than northern Denmark.

An accumulation of heavy metals is having a disturbing effect on the natural cycle and a destructive effect on human and animal organisms. Cadmium is absorbed by the liver and the renal cortex. Lead chiefly affects the nervous system. Formerly it was assumed that the greater part of the air pollution which was transported for long distances to Denmark came from the Ruhr district and England, but the most recent studies show that the direction of the wind in the eastern part of the country often is such that pollution comes in from East Germany and Poland, where the same environmental-protection requirements are not placed on industry as is the case in the Nordic countries, where significant smoke-filtering requirements are imposed, among other things.

Mosses and lichens have a special ability to absorb and retain heavy metals. Assistant Professor Lennart Rasmussen and Helge Gydesen, a secondary schoolteacher, from the Laboratory for Ecology and Environmental Science at the Technical University of Denmark, working with Kim Pilegaard, the holder of a senior scholarship at the Institute for

Ecological Botany at the University of Copenhagen, have carried out a background study of the heavy-metals content in mosses and lichens in country districts throughout Denmark.

That study indicates that the lead, cadmium, copper, chromium, nickel, vanadium and zinc content generally is approximately 50 percent higher in Lolland and Falster than in North Jutland. The relatively high percentage which was also found in northeastern Sjaelland is owing to the fact that the entire Oresund area, including the Swedish part, can be regarded as a local pollution island.

#### Pollution of Foods

Heavy metals are poisonous even in small concentrations. Therefore--and because they are entering the food chain to an ever-increasing extent--the research workers regard the pollution of food resulting from the increasing air pollution as very serious.

Studies carried out by the National Food Institute on vegetable-type foods, and especially fruits, vegetables and the organs of domestic animals, such as livers and kidneys, for example, show that pollution generally is not alarming but that in certain locations dangerous accumulations have appeared of the special heavy metal cadmium, which is absorbed from the earth so easily that Danish fruit and vegetables at present contain an amount of cadmium corresponding to one-fourth of the permissible cadmium intake.

A recently published study of heavy-metal pollution of fruit and vegetables cultivated in the area to the west of Copenhagen concludes that crops raised within a radius of half a kilometer from Poul Bergsoe's factories in Glostrup contain cadmium at levels which are "unacceptably high"--and which therefore are unfit for human consumption.

The area around the steel rolling mill in Frederiksvaerk is polluted by heavy metals in the same way.

#### Cadmium--The Biggest Problem

Ecology and environmental science is a relatively new subject at the Technical University of Denmark; the laboratory is only 2 years old. Assistant Professor Lennart Rasmussen has told WEEKENDAVISEN that even though a large portion of the poisonous heavy metals comes to Denmark from the south and the east, we are also partially to blame for the pollution ourselves.

The scientists are constantly monitoring developments in the area of the precipitation of heavy metals from the atmosphere and accumulations of them in the environment. At present, cadmium constitutes the biggest problem. Cadmium is released when coal and oil are burned. It also is contained



in pigments--for example, it provides the yellow color in plastic rain-coats. When such plastic articles are destroyed at a refuse disposal plant, cadmium is released there, and it is spread through the atmosphere.

Cadmium is also contained in automobile tires. Approximately 5 million of them are used in this country annually. When they wear, both cadmium and zinc are released to nature along the roads. A significant portion of the cadmium which is to be found in the food chain comes from fertilizer containing phosphates.

Cigarettes cannot go scot-free either. If one smokes 40 cigarettes a day, one takes in so much cadmium that the WHO's and the FAO's health limits in regard to food are exceeded.

#### Lead Pollution

Over the long term, one can foresee a slowing down of some important chemical processes in nature and a lowering of production in agriculture and forestry because of the poisonous heavy metals. That is the opinion of these three scientists who, together, have investigated the way mosses and lichens can reveal air pollution.

By means of measurements performed on moss and lichens, the amount of pollution which has accumulated over a period of from 5 to 10 years--that is, throughout the plants' life--is measured. The figures which have been obtained have been compared with the heavy-metal content in plants which were collected, pressed and dried many years ago and were mounted in the herbarium at the Botanical Museum of the University of Copenhagen.

Those studies show that increases in lead of 155 percent, in vanadium of 51 percent and in zinc of 28 percent from 1944 to 1976 have been found in North Jutland. The increase in the lead content is due especially to the increasing use of gasoline, which has brought about a notable amount of lead pollution, even though the moss samples were taken several kilometers away from heavily-traveled roads.

The increases in the vanadium and zinc content are chiefly due to pollution resulting from the burning of coal and oil and the transportation of pollution from Europe's industrial enterprises over long distances.

#### Swedish Ban on Cadmium

Pollution has imperceptible effects on the human organism.

"If one is gradually becoming stupider day by day one doesn't notice it," says Lennart Rasmussen, of the Technical University of Denmark.

In Sweden, they have begun to take drastic steps with regard to several industrial uses of cadmium. Since substitute materials exist, they have



found the proposing of a bill which completely bans cadmium justifiable. According to existing plans, the new law is to go into effect on 1 July 1980, but it has not yet been voted into law.

Denmark is engaged in the continuous monitoring of the pollution situation, as are Sweden, the United States and Canada, too. Monitoring heavy metals and using biological indicators such as mosses, lichens and foodstuffs constitute a part of that sort of program. Lennart Rasmussen, Helge Gydesen and Kim Pilegaard anticipate that other heavy metals, too, will cause problems eventually.



Map Caption: The map shows the 21 places where research workers have collected moss and lichens in rural districts. The lowest numbers indicate the lowest concentrations of lead, cadmium, copper, chromium, nickel, vanadium and zinc in moss and lichens. The highest counts fall in the areas marked with parallel lines--Lolland, Falster and the area around Frederisvaerk--where pollution with poisonous heavy metals is pronounced.

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TOXOLOGIST REPORTS SEVERAL DIOXIN ACCIDENTS WERE KEPT QUIET

Stockholm SVENSKA DAGBLADET in Swedish 5 Mar 80 p 27

[Article by Katrin Hallman: "Old 'Seveso Accidents' Were Hushed Up"]

[Text] At least five big dioxin accidents occurred prior to the toxic explosion in Seveso, Italy, almost 4 years ago, where great amounts of the dangerous substance dioxin were dispersed.

Some 134 Children received skin damage (in the form of chloracne--troublesome pimples)--most appearing 6 months after the accident.

Twenty years earlier, the first warnings of dioxin dangers attending the production of chemicals had been sent out from a German company. In all 5 explosions and 14 other reports about injuries on the job due to dioxin had been reported prior to Seveso.

Today there are three factories deposited as scrap in cement blocks in the Atlantic or in sealed containers in an abandoned salt mine in West Germany and in a coal mine in England. It has not been possible to decontaminate the equipment contaminated with dioxin.

Still the ICMESA company and its Swiss owners (Hoffman La Roche) said they were not aware that dioxin was formed in the Seveso factory. A pattern which is repeated from earlier accidents.

When the state poison expert wanted to inspect the factory where the accidents occurred a week after the explosion, he was prevented from entering the most toxic areas by the local manager, Paolo Paoletti, but the word dioxin was not mentioned. (Just a few weeks ago, Paoletti was murdered by Italian urban guerrilla.)

**Perfectly Aware**

"There is no doubt that the Swiss owners were perfectly aware of the dioxin dangers attending production of TCP in Seveso. In spite of this production

was carried out in a clearly dangerous way. The most obvious proof is that the safety valve blew right out into the air," says the Swedish toxicologist, Professor Bo Holmstedt at Karolinska Institutet.

He has recently been commissioned by the medical research boards in Europe to investigate the Seveso accident and has put together information from earlier reports of dioxin injuries. In spots his reports are thrillers, pure and simple.

In one part of Zone A in the Seveso accident the surface soil has been scraped off to a large extent. The houses have been washed and the furniture burned--to the horror of the families. 500 have moved back.

"Dioxin levels as high as in the soil from Zone A in Seveso have been reported from the factory grounds of Dow Chemical in Michigan," Holmquist points out.

#### Process Against EPA

Dow Chemical is the world's largest producer of 2, 4, 5-T--the phenoxide that is a component of for example homoslyr [a pesticide] (and which is now outlawed in Sweden). Dioxin is a contamination that comes into existence during production.

The U.S. Environmental Protection Agency (EPA) has stopped 2, 4, 5-T. This month the chemical industry's law case against EPA on this issue will begin.

The form of dioxin we're talking about--in Seveso, in the United States and in other places--is the most toxic variety, TCDD. TCDD is toxic even in very small quantities (more than a microgram per kilogram of body weight is a lethal dose for guinea pigs).

In humans dioxin injuries have been particularly apparent as chloracne, which appeared some weeks after a person had been exposed to the poison. It can often be treated with anti-biotics and vitamin A, but there is one case where a man still gets large pimples 20 years after a dioxin accident.

#### Liver is Affected

Tuula Thunberg, a colleague of Bo Holmstedt, has recently shown that dioxin destroys the liver's ability to store vitamin A. Lack of vitamin A also results in skin eruptions that resemble chloracne.

In his report, Bo Holmstedt compares the dioxin TCDD with radioactive substances since injuries often appear only after a period of time. TCDD can also result in injuries to embryos, contribute to the development of cancer, and result in genetic injury. At least in experiments with animals.

"An investigation of 121 persons who contracted chloracne after the first dioxin accident in 1949 in Nitro, U.S.A. shows that the accident has resulted in no increase in cancer deaths during the 30 years that have elapsed.

In addition to chloracne some people suffered from vomiting, headaches and nervous complaints.

"Fortunately dioxin seems to be quite a bit more dangerous for guinea pigs than for humans," states Bo Holmquist.

Christoffer Rappe, Professor of Chemistry at Umea, specialist in dioxin analysis, points out that we know very little about the accident in Nitro.

After an accident in 1952 at BSAF in Ludsigshafen (West Germany), more incidents of cancer than expected have been found among those affected.

"Three cases of stomach cancer have occurred. There should be no more than one case at the most," says Christoffer Rappe.

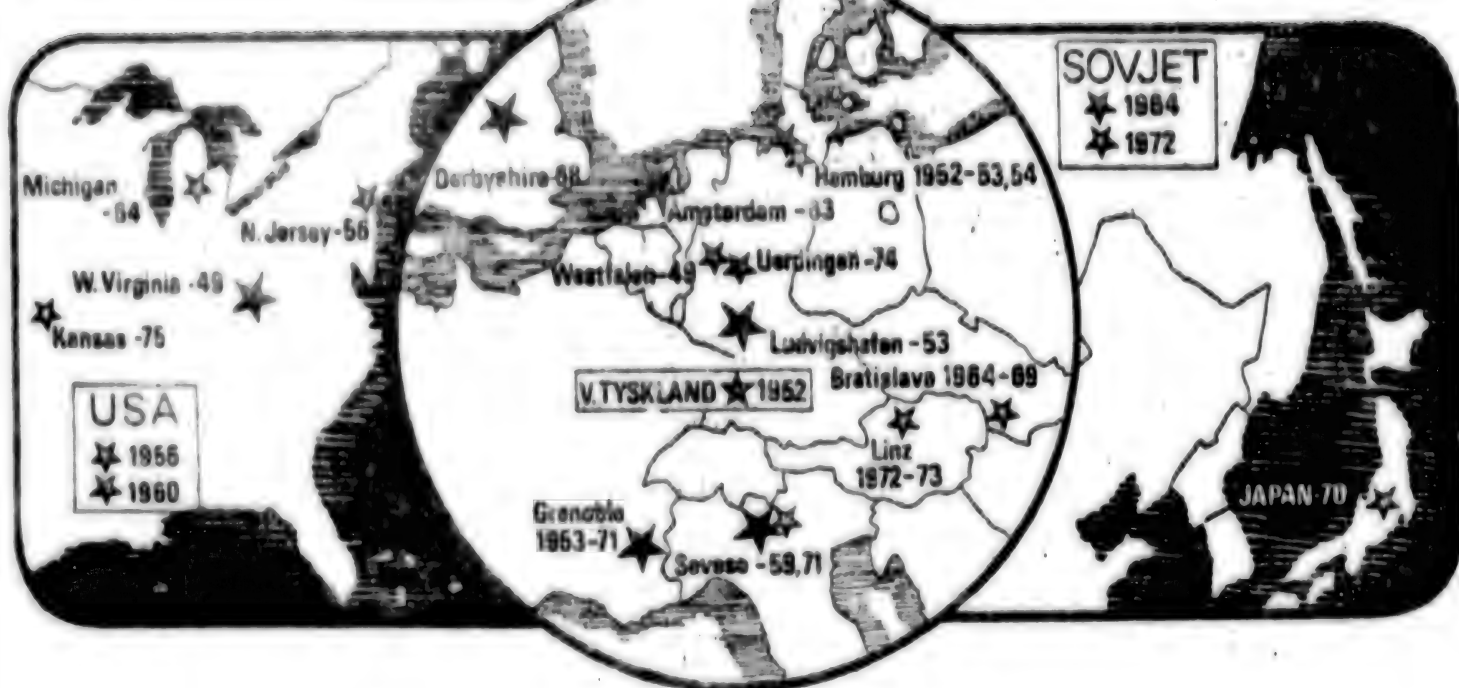
#### Vietnam

From South Vietnam--where strong phenoxides (contaminated with dioxin) were used by the Americans as defoliants--both miscarriages and increased frequency of liver cancer have been reported by Ton That Tung, vice-minister of health during the war years. (There is no strict scientific evidence for the causal connection. During the past few years the toxicity of the phenoxides themselves has also been discussed. Not least following Swedish research results which show an increase in soft tissue cancer among forestry and agricultural workers who have worked with phenoxides.)

Chemicals contaminated with dioxin have been used in Sweden as well. But no cases as chloracne resulting from dioxin poisoning have been demonstrated (however, it has resulted from other similar substances).

Perhaps the most remarkable dioxin accident in Bo Holmquist's report occurred in Holland in 1963. For 10 years Phillips ran a factory for the production of phenoxide in the middle of Amsterdam. At the explosion more than 100 employees came into contact with dioxin and some contracted chloracne.

When the factory could not be decontaminated, the whole plant was torn down by people who had to work in protective clothing with air tubes. A new harbor had to be built to load on scraps which were sealed in cement. Three shiploads were dumped in the Atlantic. At the time nothing was said about this accident.



[Map] Report of dioxin injuries are many. In 6 places explosions (large black stars) have occurred in conjunction with production of chemicals which has led to dispersal of the strong toxin dioxin. There are reports of injuries on this job from at least 14 places (small stars).

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## AUSTRALIA

### CONSERVATIONISTS' STRATEGY DOCUMENT RELEASED IN AUSTRALIA

Release by Prime Minister

Sydney THE SYDNEY MORNING HERALD in English 6 Mar 80 pp 7, 8

[Report by Joseph Glascott, Environment Writer]

[Excerpts] Every year in the developed countries of the world at least 3,000 square kilometres of agricultural land are submerged under urban sprawl.

Thourhout the world, forests protecting river watersheds are being devastated for agriculture and by logging, cutting for fuel, overgrazing, and badly managed roads. At the present rate of clearing, the world's unlogged tropical forests will be halved by the turn of the century.

Soil loss from erosion has accelerated sharply, especially throughout the food-hungry tropics. More than half of India (and about half the agricultural and pastoral lands of Australia) suffers from soil degradation.

In the next 20 years close to one-third of the world's arable land will be destroyed if the current rates of land degradation continue.

These are just a few of the startling conservation problems facing the world outlined in a major document--World Conservation Strategy--to be launched worldwide and in all States of Australia today. In Canberra the document will be released by the Prime Minister, Mr Fraser.

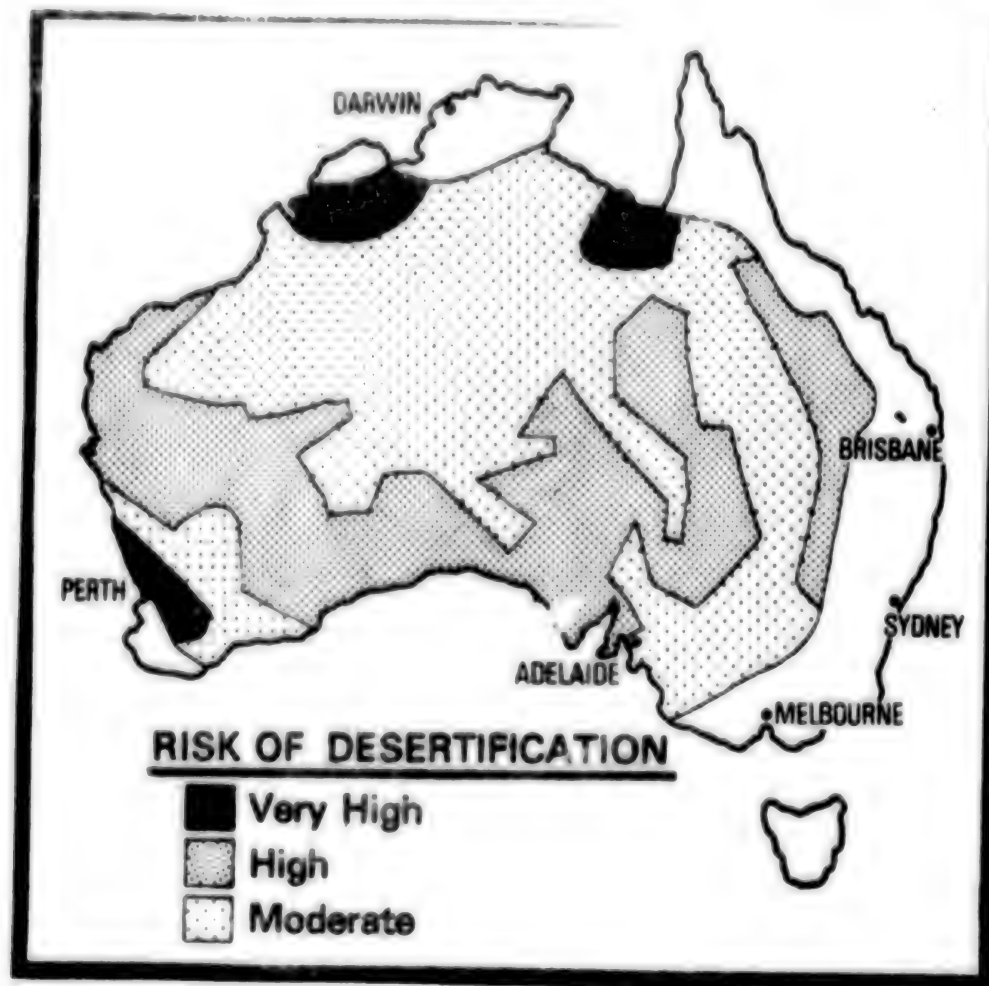
Leaving aside the chances of a nuclear holocaust, the document makes it clear that mankind is sowing the seeds of its destruction.

The damage is so severe and the threat so real that the International Union for the Conservation of Nature and Natural Resources over the last three years brought together its 450 members, government agencies and nongovernment conservation organisations, in more than 100 countries, over 700 scientists and other experts, United Nations organisations, and the World Wildlife Fund to prepare the strategy document.



Australian governments, Federal and State, cannot stand off and say that these warnings and the advice of the World Conservation Strategy paper do not apply to them.

The International Union for the Conservation of Nature and Natural Resources is hoping that Australian governments and governments throughout the world today will take responsibility to adopt this strategy to ensure the survival of mankind.



Reaction in Brisbane, Sydney

Brisbane THE COURIER-MAIL in English 7 Mar 80 p 9

[Text] The World Conservation Strategy launched yesterday will be welcomed by the State Government if it combines development with conservation.

State National Parks and Wildlife Service Minister, Mr. Gibbs said yesterday Queensland already had advanced conservation laws.

Mr. Gibbs said the strategy would be treated as a study document by the Government.

The document results from an intensive effort involving governments and more than 1000 scientists and other experts from more than 100 countries during the last three years.

The strategy, for the first time proposes a global approach to finding solutions to three main objectives:

Maintenance of life support systems, such as forests that moderate the climate.

Preservation of genetic diversity, which is essential for food production and pharmaceuticals.

Sustainable use of living resources.

In Sydney naturalist Mr Vincent Serventy said yesterday governments must act on the World Conservation Strategy paper to make it effective.

Mr Serventy, a trustee of the World Wildlife Fund Australia, said he would like Australia to take the lead in three international conservation fields.

It should be a leader in calling an international conference on protection of coral reefs, it should provide advice on conservation of rainforests to south-east Asian countries and should convene a regional Indian Ocean conference on conservation of turtles and dugongs.

## AUSTRALIA

### INSTITUTE TO STUDY ENVIRONMENTAL EFFECTS OF CONTAMINANTS

Sydney: THE SYDNEY MORNING HERALD In English 1 Mar 80 p 2

[Report by Shaun Millraith, Medical Correspondent]

[Text]

For the first time a comprehensive study is to be made of the effects on the human body of the increasing number of contaminants in the Australian environment.

The research will be undertaken by a national centre of environmental toxicology to be established by the new Commonwealth Institute of Health, which replaces the School of Public Health and Tropical Medicine at Sydney University from Monday.

Environmental toxicology is the study of the effects on the human body of poisons used in industry and agriculture, released into the air and discharged into the water.

Dr Alistair Thom, a former specialist in life-support systems in submarines and other underwater craft at the Institute of Naval Medicine, Portsmouth, will be in charge of the work.

"In the sealed capsule environment of the submarine you have a microcosm of the technological society," he said yesterday.

"The atmosphere control precautions required are

exactly the same as in the greater environment outside."

Dr Thom will be concentrating initially on the toxicology of atmospheric contaminants.

While we know a good deal about the amounts of ozone, lead, carbon monoxide, sulphur dioxide and other contaminants in the air of our cities through monitoring by State authorities, very little has been done to assess scientifically what effects these levels have on populations.

Other countries are much further advanced in this and other aspects of environmental toxicology. Dr Thom will soon visit Poland, Sweden, Britain, Canada and the United States on a World Health Organisation fellowship to see what lessons he can bring back from their toxicology centres.

He is concerned about another major weakness in Australian health surveillance: the absence of toxicological information on hundreds of new industrial chemicals introduced continually to Australia.

Even when chemicals have been investigated overseas, data on them may not be readily available here and, if it is, may still require validation, according to Dr Thom.

To fill the gap, the institute hopes to plug by satellite into a US computer service on toxicology. US data would then be immediately available through the computer used by the institute.

Necessarily much of the institute's research into the effects of environmental poisons will be by epidemiological methods, by comparing health indices of exposed populations with those of people living in uncontaminated areas.

Direct experimental evaluations are expensive. "It costs \$80,000 to test just one chemical by inhalation studies in animals," Dr Thom said.

The institute is also responsible for investigating: methods of acclimatising to heat before service in tropical areas; human performance and adaption in Antarctica; stress resulting from reading difficulty; the nutritional requirements of schoolchildren and adolescents; and a host of other matters, including the possible link between Agent Orange and subsequent illness in Vietnam veterans.

## AUSTRALIA

### BRIEFS

CHECK ON POLLUTION--The NSW Government is carrying out a \$70,000 research program into possible fluoride pollution in the Hunter Valley from the planned expansion of aluminium smelting. Macquarie University and the universities of Sydney and Newcastle have been commissioned to examine the effects of fluoride pollution before the proposed massive smelters for the international aluminium producers Alumax and Pechiney are built. [Text] [Sydney THE SYDNEY MORNING HERALD in English 12 Mar 80 p 2]

ALL-CLEAR TO HERBICIDES--There is no evidence that the chemical herbicides 2,4,5-T and 2,4-D damage helath, according to the president of the National Farmers Federation, Mr Don Eckersley. He said no such evidence had been produced despite the publication of many scientific papers since the herbicides were developed 40 years ago. Mr Eckersley said the herbicides, used widely in Australia, were among the most vigorously tested chemicals in the world. He said linking of 2,4,5-T and 2,4-D with the defoliant Agent Orange was of particular concern to farmers who, with their families, were exposed more than other people to possible dangers. "Banning these chemicals will allow uncontrollable weed growth adding significantly to the cost of agricultural production," he said. These costs will ultimately flow on to the consumer in the form of increased food prices." [Excerpts] [Canberra THE AUSTRALIAN in English 10 Mar 80 p 2]

REEF PROTECTION CAMPAIGN--Melbourne.--The Australian Conservation Foundation has launched a nation-wide campaign to protect the Great Barrier Reef. It will start with a community service announcement to be shown on television throughout Australia this weekend. The foundation has called on the Federal Government to declare the entire 250,000 sq km Reef region a marine park. It also wants it declared a world heritage area under a UNESCO convention. The foundation's director, Dr Geoff Mosley, said yesterday that the campaign aimed to persuade the Federal and Queensland Governments to back up their claim that they believed in reef protection. Australians should be aware that the greater part of the Barrier Reef was not protected, and that the responsible governments had not set aside the possibility of oil drilling. [Text] [Sydney THE SYDNEY MORNING HERALD in English 1 Mar 80 p 6]

ASBESTOS WORRIES--The NSW council of the Building Workers' Industrial Union has placed a State-wide ban on an internal lining board containing asbestos, which it considers poses a threat to workers' health. But the manufacturers of the board, James Hardie & Co Pty Ltd, calimed yesterday that if precautions which were supplied with the material were observed there should be no problems. [Excerpt] [Sydney THE SYDNEY MORNING HERALD in English 4 Mar 80 p 3] Mrs. Joan Joosten died in a Perth hospital yesterday from lung cancer she said had been caused by asbestos fibres inhaled at Wittenoom nearly 30 years ago. Her appeal to the West Australian Full Court against a Supreme Court dismissal of her claim was due to start 30 minutes after her death. It was to be a test case. [Excerpts] [Melbourne THE AGE in English 11 Mar 80 p 14]

CSO: 5000

## REPORT INDICATES SALINITY, WATERLOGGING SITUATION IMPROVED

Lahore THE PAKISTAN TIMES in English 8 Apr 80 p 4

[Editorial: "Twin Menace"]

[Text]

A recent report suggested that tubewells, instead of controlling salinity and waterlogging, are adding to the gravity of the problem. According to a appraisal carried out some time back, more than 17 million acres of agricultural land in the country have the water-table within 10 feet of the ground surface, a potentially hazardous limit, and about 8 million acres are seriously affected by salinity. The gravity of the situation created by the twin menace of waterlogging and salinity, coupled with increasing demand for agricultural products to feed the population, was acutely felt during the late fifties. A Master Plan was prepared with the object of exterminating these hurdles to productive farming. There were two choices: rehabilitate the annihilated land and increase output per unit of available resources, or bring new virgin land under cultivation. The first choice was made and initiated through the installation of tubewells, which performed dual functions

of lowering the water-table and leaching harmful salts from the soils. The Salinity Control and Reclamation Project (SCARP) was launched in the Rechna Doab of the Punjab at a huge cost. The success of the project is evident from the fact that of the 4,25,000 affected acres, 3,41,000 acres or 80 per cent of the total area have been reclaimed so far. The water-table has been lowered to 13.2 feet and the waterlogging has almost disappeared from the surface. The progress of reclamation has of course recently showed down because the emphasis has shifted to greater agricultural production of normal lands through adoption of proper cultural practices and cropping patterns, use of inputs, credit facilities and infrastructural development. The fact can hardly be denied that in the absence of any reclamation programme the economy would have suffered an annual loss of Rs. 34 million, besides an annual deterioration of 2 per cent of the remaining cultivable area.



Nevertheless, there is one adverse factor which needs to be carefully analysed and counteracted. It has been discovered that in the Indus plain the zones of underground fresh and saline water lie parallel to each other which often get mixed up due to the continuous movement of fresh water and excessive pumpage near the rivers. In Pakistan large-scale tubewell development seems to have disturbed the equilibrium of the two qualities of water and it should not be surprising if at places there have been reports of upward rise of harmful salt water. Some time back, 1875 tubewells were sampled in respect of water quality. Out of these 739 tubewells (42 percent) were declared usable, 667 tubewells (36 percent) marginal and 415 tubewells (22 percent) hazardous. The remedy is not to minimise the importance of tubewells for salinity control. The need is to increase the availability of water and improve its quality through proper management and constant research. The present pumping capacity of the tubewells is 3,316 cusecs against the designed capacity of 6,029 cusecs. Thus the water supply for irrigation purposes is not enough; it is short when needed most and in abundance when needed least. This irregular and erratic pattern of water supply has adversely affected agricultural output. The only option, therefore, is to increase the supplies of water whether lying underground or flowing in canals, and to improve its quality through effective water management.

CSO: 5000

## THAILAND

### CENTRAL THAILAND DROUGHT, SALINITY CAUSING SERIOUS PROBLEMS

Bangkok BAN MUANG in Thai 13 Mar 80 pp 1, 2

[Article: "The Widespread Drought Is Causing Serious Problems for the Farmers"]

[Text] The farmers are experiencing a serious drought. The rice is stooling but there is a shortage of water and this is forcing them to spend money for gasoline to run the water pumps. The Irrigation Department has criticized reporters concerning the drought problem, saying "why do you what to know?"

After following the news reports concerning the drought, Mr Montri Wohan, a farmer from Village 3 in Rahaeng commune, Latlumkaeo district, Phathumthani Province, complained to the newspaper BAN MUANG about the drought and about planting the second rice crop this year. There is very little water. Usually, the Phraudom irrigation canal is filled with water throughout the year but this year it is almost dry at the water gate. Large water pumps must be used to pump water from the Chao Phraya River into it but there is still little water. The farmers who need water during the period when the rice begins to stool and some places at the end of the canal where the rice was planted only about a month ago must use water pumps day and night to pump water into the small canals next to the fields. This uses much gasoline but if there is not enough water, it is feared that the rice will die or that the rice that has stooled will not produce full seeds.

As for the price of sola oil, at present, [the farmers] will try to purchase it at the price announced by the government and not buy it at the special price of 8 to 8.5 baht per liter.

Besides the shortage of water for farming, even though they live in an irrigated area on the western bank of the Chao Phraya River, the farmers are encountering epidemics of such things as rice yellows, fungus and brown planthoppers. The farmers must help themselves. They purchase various insecticides from companies and stores that send sales representatives to discuss the properties of the various types of insecticides, regardless of whether it is a water-based insecticide or a powdered insecticide, in order to have a good harvest and do not discuss matters at all with the agricultural representatives.

Concerning the Phraudom irrigation canal, at present there is little water in it. The canal is filled with water lilies and this clogs the canal and nothing is being done about this.

However, following the drought situation as reported by the reporters, there have been reports concerning the salinity of the water in various rivers. These reports have stated that, at present, the salinity of the water in the Tha Chin River at the Prathom Phokaeo Bridge has been measured at 0.3 grams per liter. It has been measured at 0.7 grams in the Klong River in Damnoen Saduak district; 3 grams in the Bangpakong River in Bangkhanak commune; 11.6 grams at Phra Khonong; 1.3 grams at the Phutthayotfa Bridge; 1 gram in the Dan canal; and 0.08 grams at the Phra Ram 6 Bridge.

If the salinity of the water reaches 1 gram per liter, it cannot be used for agriculture. The report stated that, at present, the water [in the river] is salty up to the Phutthayotfa Bridge.

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CSO: 5000

## THAILAND

### MEO DESTRUCTION OF FORESTS

Bangkok BAN MUANG in Thai 9 Mar 80 pp 1, 2

[Article by Suchet: "Meo Tribesmen Destroy Headwater Forests; Police and Rangers Ignore Matters"]

[Text] Phrae: Approximately 30 Meo families from Huaikhun Sathan and Bohoi [villages] and from other provinces have illegally entered the national forest reserve at a place where there is a stream to the north of Pakhuaioy village, Banwieng commune, Rongkwang district, Phrae Province. They have cut down thousands of rai of large trees in order to carry on slash-burn farming. The Meo have destroyed almost the entire area stretching to Li commune in Nanoi district, Nan Province. The police and forest rangers have not made any arrests or done anything about this.

This forest area that the Meo have destroyed in order to carry on farming activities is the headwater of the beautiful and famous Tatsaowa waterfall in Phrae Province. The accelerated rural area development program has built a road from Pakhuaioy village almost to the waterfall so that tourists can go visit the waterfall. However, this road has instead been used to haul illegally cut logs and earth. The people in Pakhuaioy village are afraid that the complete destruction of the forest in the headwater area will give rise to serious drought next year. The approximately 70 families that live in Pakhuaioy village and who make a living farming face shortages of water for drinking and daily use. They have, therefore, earnestly called on the provincial authorities, police and rangers to put a stop to the destruction of the forest, arrest those who cut timber illegally and not ignore matters as is now done everyday.

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## THAILAND

### RATBURI SALINIZATION PROJECTS UNDERWAY

Bangkok BAN MUANG in Thai 14 Mar 80 p 6

[Article: "Block Out the Sea Water and Distribute Fresh Water"]

[Text] In Damnoen Saduak district, Mr Yut Kaeosamrit, the deputy governor of Ratburi Province, met with Mr Prawet Phruksasi, the district officer of Damnoen Saduak district, concerning the salinization problem so that the district and province can cooperate with each other and coordinate activities in helping the farmers who are presently encountering problems with salinization. The district will carry on short-term projects to build sea dikes in several areas where sea water flows in. If it is not possible to keep out the sea water using such short-term projects, the district will have to quickly start planning long-term projects in order to request funds to quickly support the projects.

Mr Yut Kaeosamrit, the deputy governor, told the newspaper BAN MUANG that, at present, the people in Chombung and Paktho districts and Suanphung subdistrict are experiencing a shortage of drinking water and foodstuffs. The province has used water trucks belonging to the Ratburi provincial administrative organization, loaded them with well water and water from the Klong River and sent it to help the people in the above mentioned areas who are short of water. By doing this, the province is having to pay an additional 30,000 baht per month for gasoline for the water trucks.

Even though there will be less water in the irrigation dam, the deputy governor of Ratburi Province was pleased about the good cooperation received from Mr Sanya Na Bangchang, the manager of the Ratburi Irrigation Works. On the left bank of the

Klong River, water has been released from the dam and pumping boats have been sent to pump water into the irrigation canal in order to help the farmers in Damnoen Saduak district and in Bangkhonthi district in Samutsongkhram Province who are having problems with sea water.

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## THAILAND

### BANGKOK FEARS SALINIZATION, PLANS CANAL CLOSURES

Bangkok SIAM RAT in Thai 11 Mar 80 pp 1, 12

[Article: "Bangkok Closes Canals in the City for 2 Months Because of the Fear That Sea Water Will Enter the Canals"]

[Text] Bangkok is preparing to close various large canals because of the intense drought, which has caused the sea water to rise and threaten the crops in the Bangkok area. The canals will be closed for 2 months. Which canals will be closed and when they will be closed will be disclosed at various times.

Mr Wira Thanomsak, the head of the Bangkok Public Relations Bureau, discussed matters concerning preventing sea water from entering the rivers and canals during the dry season. He stated that:

At present, sea water is rising and approaching the canals. If a way is not found to prevent this, this water will flow into the various canals in the Bangkhunthien and Ratburana regions in the area near Samutsakhon Province, which is a low area where crops are grown, especially oranges.

Concerning this, Bangkok received a report from the head of the Bangkhunthien area concerning a plan to help keep the sea water out by building a temporary dam in three areas with the cooperation of all three areas. The Irrigation Department will provide help in order to prevent sea water from entering the canals, ruining the land under cultivation and causing losses. Thus, some canals will be closed and will not be open for travel for 2 months in order to build sea dikes. As for which canals will be closed, Bangkok will make announcement so that the people will know in advance.

Mr Wira Thanomsak, the head of the Bangkok Public Relations Bureau, stated that he had received a report from the head of the Phrakhonong regions stating that, at present, the area surrounding the Phrakhonong region was experiencing a shortage of water for daily use and for planting the second rice crop. The head of the region recommended that, this year, the farmers consider the water shortage and give attention to the fact that if they go ahead with the planting of the second rice crop this will lead to large losses since it is very dry this year. As for ways to solve the problem, Phrakhonong is coordinating the various activities. Another important problem of Bangkok is that at the various public canals, it seems that large numbers of people have trespassed and built houses along the canals. This is one reason why it is difficult to drain the water and dredge the canals. So that the demolition work can be carried out quickly, the Administrative Committee has ordered that the work in dredging the canals and tearing down the buildings that have been built in public areas be divided between the Water Drainage Bureau and the various regions. This division of the work should ensure that the cleaning up of the canals is done more quickly. As for what should be done with the people who have trespassed on public places, the matter must be handled in accord with the law.

11943

CSO: 5000

OFFICIAL OF CZECH ENVIRONMENT PROTECTION AGENCY INTERVIEWED

Prague RUDE PRAVO in Czech 5 Mar 80 p 5

[Interview with Miroslav Kanok, chief inspector of the Czech Technical Inspectorate for the Protection of the Atmosphere, by Zdena Stepankova]

[Text] It was emphasized at the 15th Party Congress that an integral part of the Party policy in solving problems of material and cultural standards was also the care for the environment. This is a problem shared by advanced industrial countries all over the world, and it is not easy to master it. Adopted laws, directives, and government resolutions are to guarantee that environmental protection will become a constant concern of all organizations. Moreover, certain institutions are responsible for monitoring the extent to which the adopted principles are being applied. We have asked chief inspector Miroslav Kanok to respond to a few questions.

[Question] What environmental protection tasks are the responsibility of your agency?

[Answer] In our very name we have the word atmosphere. Briefly, one could therefore say that the goal of our work is to contribute maximally to the resolution of this very serious problem at its source, i.e., in enterprises, plants and organizations which are polluting the atmosphere. For this purpose, we utilize all the means accorded us by Law No. 35/1967 and the statutes of our agency.

[Question] Looking back, how would you evaluate last year?

[Answer] I can say that our inspectorates in all krajs were definitely not idle. They carried out more than 1,700 inspections of pollution sources, issued 60 decisions on implementation measures to reduce harmful emissions, evaluated 490 projects, submitted to the national committees 67 proposals to levy fines amounting to 7.5 million korunas for organizations, and proposals for individual penalties in the amount of 40,000 korunas.

[Question] What does inspection focus on?

[Answer] Primarily on operation, servicing, and maintenance of equipment designed to protect the atmosphere. Last year, we inspected most of the important pollution sources.

[Question] Were you satisfied?

[Answer] The care for equipment has certainly improved; however, problems continue to exist. Shortcomings in maintenance capabilities, especially shortages in spare parts, affect break-downs, loss of time and the average effectiveness of filtering equipment, especially where older types are involved. There are also, of course, cases of breaches in discipline, whether by neglect in technical areas, or through failure to observe prescribed procedures. In such cases, we are uncompromising and "evaluate" all such findings by penalizing not only the organization, but also the responsible workers.

[Question] Could you name at least a few specific activities which have contributed to a cleaner atmosphere, and organizations which could be commended in this respect?

[Answer] We can rate very highly the reconstructed electric ash filters in the Opatovice and Melnik II Electric Works; in the Tisova I Electric Works, improvement in the operation of electric filters also continues in other production blocs. Last year, new scrubbing equipment was put into operation in the rotary furnaces of the Lochkov cement works. In chemical industrial plants/Moravian chemical works, Urz plan\*), we have achieved a cleaner production method of sulphuric acid by means of internal absorption. Emission of sulphuric oxide was reduced by 2,000 tons annually by putting into operation the Clauz units in the Dukla Hrusov Chemical Works. In the Sokolov chemical plant, emission of carbide dust was reduced by 800 tons annually, and emission of ash particles also by 800 tons annually. These are but a few examples.

Through correct approaches and by implementing adopted measures, other organizations have also contributed to reducing emission of pollutants, even though they have not yet solved all the problems of atmosphere pollution in their installations. I could cite the Fuels Combine of 25 February in Vresova, North Bohemian Chemical Works in Lovosice, the electric works in Ledvice, Spolchemia in Usti nad Labem, NHKG Ostrava, and MEZ Frenstate, etc.

[Question] Whom have you fined and for what?

[Answer] Again, I'll try to be specific. These are, for example, the Central Bohemian Quarries and Gravel Works in Prague which was fined for faulty servicing and maintenance of simple fogging equipment in some of its installations. Skoda Pilsen was also fined for removing electric filters

from operations because no arrangements had been made for ash removal. The Detmarovice electric plant was fined for non-observance of prescribed conditions for operations. We found faulty maintenance of equipment in CKD Plotiste; valid regulations were not observed by Prefa Vanov, Fuels Combine of Antonin Zapotocky, Uzin Gas Works, Kolora in Hradek nad Nisou, North Bohemian Construction Works in Usti nad Labem, Silon in Plana nad Luznici, Karborundum in Benatky nad Jizerou, Tesla Karlin, and many other organizations whose operations have caused atmospheric pollution.

[Question] If you could make a wish, what would it be?

[Answer] It is not only a wish. I am convinced that the need for our unpopular intervention will gradually decrease, especially the necessity of fines, and that we will be able to better utilize the capability of our personnel toward resolving technical problems to reduce the amount of harmful emissions into the atmosphere. The organizations we were able to commend this time around, represent concrete evidence that the number of those who are aware of the need and obligation to protect our environment, is growing.

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CSO: 5000

## ENVIRONMENTAL CONTROL OF OIL SPILL DESCRIBED

Warsaw TRYBUNA LUDU in Polish 31 Mar 80 p 5

[Article by Krystina Panek: "After the Pipeline Failure, a Time for Conclusions"]

[Text] The news about the pipeline rupture reached the Environmental Research and Control Center [OBiKS] in Plock at 2:25 pm. By that time the torrent of crude oil flowing through the ruptured part of the pipeline managed to penetrate through the soil and gush out as a fountain at the surface. A large crater appeared around the ruptured section, exposing the pipeline. The soil was drenched and carried away by the swift-flowing stream of oil. By the time the OBiKS crew arrived, workers from the Oil Pipeline Operation Enterprise, who were informed about the lead at 1:25 pm, were attempting to repair the damage.

There was a deep hole in the ground at the rupture point. Thus, the oil did not flow over a large area, only a relatively narrow stream of oil flowed over the frozen ground into land-reclamation canals and surface waters. For unknown reasons, the oil caught fire, which very quickly set aflame buildings on nearby properties. Despite the tremendous dedication and efforts of the firemen and civilians, the fire was contained only after it had spread almost 1 km beyond the rupture site. After the blazing wall of fire was extinguished the oil continued to spread further.

The battle to control the rupture lasted 36 hours. The flow of oil to the damaged section was cut off by shutting the gate valves at both ends of the section. Before starting welding work, it was necessary to remove the oil from the isolated section. The removed oil was stored in a nearby land depression that was quickly embanked in order to limit the contamination of the area. From here the oil was pumped out and transported via waste-removal vehicles to Petrochemia.

### Ecological Problem

After the damaged section of the pipeline was replaced, the oil started flowing again. But a much more serious problem remained: eliminating the results of the accident. The expanding oil spill threatened waters stored



in overflow ponds located in its path. A large concentration of oil sewage could foul up the water intakes of nearby plants. Thus, the stakes were high. Throughout the entire day, six barriers consisting of branches wrapped in straw matting were placed in the path of the spill.

The following day (the third day after the accident) 7 Norwegian plastic barriers were flown in via helicopter from the Maritime Institute. These barriers, which are floating buoys with tight flaps submerged in the water, are excellent when it comes to limiting oil spills on still water, but their effectiveness in this particular case was limited. An attempt was made to gather the accumulated oil into land depressions near the barriers from which it was pumped out via the waste-removal vehicles.

It was then decided to construct sandbag barriers. This method was successful in protecting the land and collecting the oil. Two reservoir-traps were excavated nearby. The oil scum was directed to the traps via shallow channels from whence it was pumped out by means of waste-removal vehicles.

All in all 800-900 tons of oil were removed from the traps and land depressions. It was a great success, but it is conceivable that the remaining oil could have flowed further. As a matter of fact, however, joint investigations conducted by the Plock and Wloclawek OBiKSs indicate that the amount of oil products in the surface waters was less than the permissible standards for class III streams, but it is possible that small amounts of the spilled oil accumulated beneath the ice sheets. Let us hope that the spring thaw proves these conjectures to be false!

The action ended but Pern and the Enterprise for the Operation and Maintenance of Land Reclamation Equipment of Torun will clean up the area by burning the oil soaked plants until the spring waters start flowing.

It is difficult to predict how this accident will effect the environment. This has been our first experience, and perhaps we should be thankful that the accident happened at a time when the biological life in water is in its winter sleep and the effects of the accident may prove to be less severe.

The fact that the land around the pipeline rupture was frozen may mean that the oil did not seep deeply into the soil and that the burning off of the oil spill that remained on the ploughed land will prove to be more effective. It takes about 3 years to recultivate land contaminated by oil spills.

#### Determining the Causes

Such at least are Pern's experiences to date. It is to date because this is not the first accident of its type. However, it was never thought that the oil leak would reach surface waters.

To date the reasons for the accident near Plock are not known. A specially convened commission and a group of experts are continuing work to determine the reasons for the accident. An investigation of pipe sections associated with previous accidents showed that corrosion was not excessive.

Ruptures usually occur where the welding is weaker or where the pipe is slightly thinner (even though pipe thickness meets standards, the pipe cannot at times withstand increased pressure). Thus, the accidents are a matter of chance. Pern monitors the condition of pipelines from an airplane where even small leaks can be detected because they show up as spills on the fields.

Many enterprises, social organizations and civilians participated in the salvage operations that were sponsored by the voivodship authorities and directed by N. Latuszek, OBiKS director. Material help was also received from other voivodships.

#### In the Opinion of the Experts

Now that the accident damage has been corrected, the time has come to analyze the actions taken and draw conclusions regarding future actions to protect areas near the pipeline. The participants in the actions postulated that it is necessary to thoroughly test the condition of the pipes and replace those pipeline sections that show metal fatigue. It was indicated that it would be advisable to install gate valves and build dykes or embankments, especially where they previously existed vis-a-vis land-reclamation canals. Above all, they serve to regulate water conditions in the field, but they also could be used to cutoff the flow of oil to surface waters in case of an accident.

Organizing salvage operations is also necessary. The formation of action teams, patterned, for example, after flood-control committees, and the establishment beforehand of a system to inform institutions called upon to eliminate the effects of an accident or to supply equipment, could improve preventive undertakings and greatly limit the extent of emerging losses. It also would be worthwhile to store appropriate amounts of such modern material as absorbents that do not render the oil useless and to develop methods for their application.

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CSO: 5000

## DEVELOPMENT CAUSES POLLUTION

Tel Aviv MA'ARIV in Hebrew 18 Mar 80 p 19

[Article by Ezra Yaniv, MA'ARIV correspondent: "Cities in a Trap: Development Disturbs Resort Sites."]

A prophecy made for the Ashkelon district is that in 5 or 10 years, it will be possible to see from the air two beautiful towns on the beach, Ashdod and Ashkelon. However, on the north side of Ashdod, are the chimneys of the Eshkol stations. In the south of Ashkelon, is the huge chimney of the Zikim station. North of Ashdod, 9000 dunums are to be added to the area of the port; South of Ashkelon is the quiet oil port. In addition, there are in the area landing and take-off sites for planes that head for the sea. If we look further into the future, we will have the Nitzanim site between Ashdod and Ashkelon, which is going to be the site of the first nuclear power station in Israel. Already, energy experts in Israel, in cooperation with the Americans are starting to develop the first desalination plant of its kind in Israel. In less than 2 years, they will put in power station Eshkol A (the smallest among the power stations in Ashdod).

While developers swarm the area, the mayors of Ashdod and Ashkelon are preparing for a hard battle against air pollution and the harm caused to the quality of life in the region by all this development.

## The Problem in the Next Decade

Right now, controversy centers on the location of the sites and the determination of the projects which will be carried out in the area. The representatives of the public have to choose between quick development and the protection of the environment. The mayors of Ashdod and Ashkelon, each of which has a population of 60 to 70 thousand, and each of which is expected to grow a lot with the development, cannot remain indifferent to the problem of pollution in the next decade.

A few years ago, for example, there was a dispute over the plan to build the nuclear power station in Nitzanim. After the plan was shelved at the initiative of the Americans, the dispute died down. Now the dispute is

renewed because of the plan to have a power station which would operate on coal in the same area. At the front of the dispute is the mayor of Ashkelon, Eli Dayan, who is the chairman of The Cities' Organization for the Protection of the Environment in the district of Ashkelon. The city council of Ashkelon demands that before the plan is approved, certain conditions must be met. The Cities' Organization for the Protection of the Environment which includes 11 city councils in the district of Ashkelon decided to oppose the building of the station. The mayor of Ashdod, Zvi Tzilker, proposes to build the power stations north of the Eshkol site which is near Ashdod. The proposal is supported by official representatives of the transportation ministry, port authority, and many representatives in the state committee for development and construction in the ministry of the interior, who represent many towns and institutions. Only the ministry of energy and the power company think that the power station which will operate on coal should be built on the Zikim site, south of Ashkelon, and they have no less influence than the other camp.

#### A 240 Meters Chimney

At this stage it seems that if the Zikim site will be chosen by the transportation ministry and the defence ministry to be the site for the future international airport, no [further] opposition to the construction of the power station will succeed, as it apparently does not disturb the plans of the defence ministry in the south. The claim that the 240 meters chimney of the power station would endanger the movements of planes in the airport was the most valid opposition. A beach can be built there even with the power station, since the only reason the power station is near the sea is the fact that it needs huge quantities of water.

The problems are inland. Many residents in the area are afraid of the smoke and soot which are going to be generated by the station every day. The pollution problems will be more visible, and they are now the main concern of the mayors, the heads of the district councils and representatives of the ministry of the interior and the ministry of transportation.

#### Zikim North and South

In fact, there is an approved government plan for the construction of a power station on the site "Zikim South," but the power company wants to construct a power station operated on coal on the "Zikim North" site, this would put it 3 kilometers closer to Ashkelon and increase pollution there. It would also put the planned projects closer to each other and thus also increase pollution. The [power company's] plan is to construct a power station similar to the one in Khadera by 1985-86. This station would be built on an area of 1700 dunums, and would have stronger turbines which would produce 1100 megawatts a year. When the people from the power company point to the northern site in Zikim, the mayor of Ashkelon, Eli Dayan, and the environmentalists in the interior ministry say that this site was not approved for this purpose. Only the southern one was approved, and that too given certain conditions. The mayor of Ashkelon emphasized in the district committee for

planning and construction in the southern district, headed by Yitzhak Vardimon, that there is strong public opinion against the construction of the station. He said that it would be difficult to bury the refuse created by the burning of the coal, which may reach a quantity of 1200 tons a day, and more than 350 thousand tons a year. In the rainy season, the soot will permeate the underground water and would lead to the poisoning of the wells.

Mr Dagan, one of the two representatives of the power company who took part in the meeting in the south, said that the power company encourages a comprehensive discussion even today, so that anyone who has opinions on the subject would air them now, and so that the government committee for planning which is now discussing the site for the power station could deal with all issues. "This is a project which will cost millions of dollars," said the representative of the power company.

#### Residents Ask For Guarantees

The government committee for planning and construction, headed by Dr Chaim Kovarsky, convened on the fifth of February, and decided to appoint a professional sub-committee in which would be represented the representatives of the area and representatives of the organization for the protection of the environment. It seems that the representatives of the residents do not oppose the construction of the station offhand, but want guarantees and promises, anchored in contracts and written agreements, which would prevent dangerous pollution and would compensate the area for the loss of beaches, tourist attractions, agricultural development or the development of Ashkelon as a resort town. We cannot forget that promises given before the construction of the oil port in Ashkelon, to develop internal tourism by digging an artificial salt water lake whose shores would be developed as beaches, never materialized. Nor was the plan to build a breakwater, which was postponed repeatedly, ever fulfilled.

The license for the construction of a power station at the Zikim site can kill the chance that Ashkelon would become a central point on the canal between the Dead Sea and the Mediterranean, if it were ever dug, thus making it an important resort and tourism site. That is another reason why the leaders of the town do not want to take chances. The mayor of Ashdod, Zvi Tzilker, sent 1980 urgent letters to all concerned to convince them to move the planned site of the power station from Zikim north to the site of the existing power stations in Ashdod. In addition, he asked Mr Vardimon to have an urgent discussion in the district committee on the projects for the international airport and the power station. "I think that there is a contradiction between the information and the outlined plan in the southern district," he said in the letter. To David Shifman, the chairman of the board of the power company, Tzilker sent a letter in which he said that according to the surveys of surveillance stations in Ashdod, there were many violations of the regulations regarding pollution last year, caused by air pollution from the power stations in "Eshkol." The power company should better use fuel with a smaller amount of sulphur, to prevent air pollution.



The mayor of Ashdod stressed in his conversation with us that the construction of an additional power station in the south of Ashkelon can dangerously increase air pollution.

Where Would The Smoke Go To?

Daniel Morgenstein, head of the department of shipping, ports and cargo in the transportation ministry claims that the winds in the Ashdod area would drive the smoke north not only from the Eshkol stations, but also from the coal power station. If the station were constructed north of the Eshkol site, the pollution would not hurt Ashdod. Mr Shlomo Brovender, who is in charge of pollution prevention in the Zikim station, has an opposite view. He thinks that the pollution might affect Ashdod, in addition to the harm it would cause to the citrus plantations.

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CSO: 4805

DROUGHT TO BLAME FOR HIGH LOSS OF LIVESTOCK

Gaborone DAILY NEWS in English 31 Mar 80 p 1

[Article by Mishingo Mpaphadzi]

[Text]

Over 80 per cent of livestock mortality at the Bobirwa and Mmadinare cattle post are being caused by the absence of adequate grazing land. And it is predicted that more cattle are likely to die at the two regions beginning July this year when the grazing pastures will have been completely exhausted.

This sad news was disclosed by the Agricultural Officials based at the two regions during a short monthly meeting held at their Bobonong Regional headquarters.

The report came at a time when high hopes indicating a relatively drought free season are being widely entertained in many parts of the country.

Mmadinare North has so far been declared the worst hit by the drought. Livestock mortality there hovers around 100 beasts a month. A farmer in the area, Mr Mosinki Mosimanyane is reported to have lost 20 cattle since January this year.

Tsetsejwe is next on the least, with 60 cattle having died from drought.

Farmers in this area indicated that the majority of their livestock was now feeding on cow dung.

Although no definite livestock mortality figures were readily available, the Tobane area is also in bad shape and most of the damage to grazing land is being attributed to overstocking and last year's poor rainfall.

The meeting also heard that an earlier appeal made by the Ministry of Agriculture urging the farmers to plough a new hybrid seed as one way of combating crop failure, has been received with mixed feelings.

The Agricultural officials revealed that most farmers have been very reluctant to plant the new seed in large quantities apparently because they are not used to it.

They further noted that although special drought relief operations has been carried out at some parts of the two regions, the Programme has not been implemented extensively.



## NIGERIA

### LAKE CHAD DETERIORATION HURTS FISHING INDUSTRY

Lagos DAILY TIMES in English 1 Apr 80 pp 7, 15

[Article by Coker Onita]

[Excerpts] It is an endless stretch of arid land that leads to Lake Chad. About 30 metres close to the lake is vegetation mainly of green parus grasses.

At the shores of the lake were rickety and unkempt boats stuck in the sand.

Two police motor boats and customs patrol boats were parked at the shores.

A top official of the Lake Chad Research Institute, Maiduguri, left for Lake Chad, some 400 kilometres away, accompanied by a few other officials.

Their mission: To catch fish.

After three hours of fruitless search they switched to River Yobe, one of the rivers emptying into the lake, yet there was no luck. Later they had to buy some from fishermen.

This goes to show the rate of depletion of different species on the Nigerian side of Lake Chad waters. Lake Chad once covered about 25,000 kilometres. Today, it is just about 6,000 to 8,000 square kilometres. Battered by drought, the lake began its retreat in 1907. The lake retreated for more than 30 kilometres again during the 1972/73 Sanelian drought.

The amount of rainfall in any year affects its level. In the years of heavy rainfall like 1962, the lake overflowed its banks. The present site of Lake Chad Research Office at Baga was formerly under water. It is now about four kilometres from the vanishing lake.

The amount of water emptied by Rivers Chari, El-Beed, Serbewel, Taftaf and Yobe has diminished.

Fishing is the major occupation around the lake. Four countries, the Chad Republic, Niger, Camrouns and Nigeria, depend on fresh fish. Forty percent of Nigeria's fresh fish is caught from Lake Chad, and in spite of the serious ecological setback, total tonnage of fish harvested has been described as "inexhaustible."

In 1972, the total tonnage of the processed fish was put at 36,555. In 1977, figures released by the Lake Chad Fisheries Research Department put total tonnage at 132,000 tons. A sum of N300 million was realised from fishing in the lake in 1972.

However, more than 40 percent of processed fish leaving the Chad shores have been spoilt during processing and transportation.

Mr Tayib Alkali, the acting co-manager of Baga Fisheries Project said preservation presented unusual difficulty because fish deteriorated fast in high ambient temperatures.

"The major problem with our research is that insects infest small fishes." According to him, 25 percent of fish is lost to insects.

Mr Alkali said that all the fishes that cannot be sold immediately are smoked. The fishermen, he said, were expected to have smoking equipment such as trenches, galvanised plates with wire mesh on top of them.

"They (fishermen) are constrained by lack of fuel to adequately dehydrate the smoked fish. When found, the firewood is far too costly to be used for fish smoking. For this reason the fish is moist and quickly gets infested."

He said the FAO projects were already working on better ways of processing and packaging.

At the Baga office is the new Ice Plant project expected to go into operation immediately. "This will produce 14,000 tons of ice per day to assist the fishermen," Mr Alkali said.

Not far the flake rice project is the place where the boats are built. He pointed at a 24-footer boat for use with 50 horsepower outboard engines. "These cost between N1,800 and N2,000," he said.

Mr Alkali later spoke on the weedy lake. He said that an FAO expert was due "to come and study the weed situation."

CSO: 5000

ESTABLISHMENT OF MINISTRY OF ENVIRONMENT URGED

Johannesburg THE STAR in English 31 Mar 80 p 22

[Article by Mike Nicol, editor of AFRICAN WILDLIFE]

[Text]

The sword of Damocles, hanging by an ever-fraying hair over conservation in South Africa, has two words written on it: Population Explosion.

With an anticipated doubling of the population to 56-million by 2005 the destruction of natural areas and the extinction of some species is inevitable, says a report by the Wildlife Society of South Africa.

The report urges the establishment of a Ministry of Environmental Planning and Conservation, that the Government commit itself to conservation.

The report says a single Ministry of Conservation would ensure that the R25-million spent annually on conservation would be used efficiently and effectively.

A single powerful body would also eliminate the overlap and confusion caused by the 14 government organisations presently dealing with conservation.

Although South Africa has 57 national parks and game reserves, it has preserved only 3.4 percent of the land.

That is far short of the International Union for the Conservation of Nature's recommended minimum of 10 percent.

If the country is to preserve viable examples of its major ecosystems a further 41 conservation areas should be proclaimed.

South Africa's conservation effort has been largely concerned with inland reserves and little attention has been paid to inland water ecosystems. Many of these have been destroyed or drastically changed.

Fresh water is one of the country's basic needs in the long term but little has been done to protect headwater streams in the north-eastern Cape and upper Orange River catchment.

The same can be said for the coastal areas. According to the report, most of the country's estuaries have been "severely degraded" and there is an urgent need to establish 44 estuarine reserves and 40 marine reserves.

Estuaries and marine reserves are important for the fishing industry.

The status of South Africa's wildlife is little better than that of its habitats. The report says that 101 bird, 71 mammal, 28 freshwater fish, nine frog, and 37 reptile species are on the endangered list.

Plants are equally threatened. Of 17 500 species, 1 945 grace the IUCN endangered list. The Cape fynbos, the world's sixth smallest, but richest, floral kingdom faces the greatest destruction.

"Of a total (fynbos) flora of about 6 000 species, 1 259 species are in the threatened category," says the report.

Even though 80 percent of the country is still under natural vegetation it is by no means all healthy.

Poor farming in the Karoo has turned 12-million hectares of grassland into semi-desert and, despite considerable legislation and other measures to control soil erosion, more than 25 percent of the soil's fertility has been lost.

By far the greatest factor contributing to soil loss is run-off into rivers.

"Between 100 and 150-million tons of soil are washed into the country's rivers annually," says the report.

Ineffective government policy and farmers who do not appreciate conservation principles are to blame for this, according to the report.

Also inadequately controlled overgrazing in black homelands, where about 33 percent of the country's 25-million people occupy 12 percent of the land area has reduced areas to virtual deserts.

"Government schemes to promote improved farm management by providing large subsidies have failed," the report says.

Given these challenges, the report sets out four aims:

- To obtain a constitutional commitment from the Government to environmental conservation and to promote public awareness of conservation.

- To ensure the creation of as many conservation areas as are necessary to maintain a full representation of the country's diverse range of ecosystems and species.

- To initiate a campaign to reduce soil erosion. With the increasing need for food, South African cannot afford to waste land through erosion.

- To control and reduce pollution levels despite increased industrialisation and urbanisation.

## STUDY TO INVESTIGATE POLLUTION OF WATERS

Copenhagen BERLINGSKE TIDENDE in Danish 29 Mar 80 pt II p 3

[Article by J.J. Kjaergaard: "Aristocrats of the Animal Kingdom Disclose Bacterial Poison"]

[Text] To find out what claims can reasonably be made in regard to the quality of tap water, they now want to test the purest spring water imaginable in the northern part of Norway. The lowest level of contamination they can detect there will become the standard for comparison for water in other places in the world in the future--and for many of the tests which will be carried out in Denmark.

Samples are being taken in Norway by Tom Mikkelsen, who is the holder of a scholarship. He received 14,000 kroner from the Carlsberg Fund for that purpose. What is being performed is a Limulus test, and that is a fantastic story which actually begins more than half a billion years ago, when the king crab, or horseshoe crab, species came on the scene.

The king crab, who is called Limulus in Latin, is still going strong, and he is called the aristocrat of the invertebrates of the animal kingdom.

That is partly because they have such a long pedigree and partly because they actually have blue blood--with proteins containing copper--whereas we and other animals use iron to transport oxygen.

In 1964, the Danish-American scientist Frederick B. Bang and his colleague Jack Levin, at the Woods Hole marine biological laboratory, discovered that an aqueous extract from the king crab *Limulus polyphemus* showed a distinct reaction when it was exposed to a billionth of a gram of poisonous material from the so-called Gram-negative bacteria. Those are products which can result in infections requiring hospitalization, such as typhus, cholera, meningitis and dysentery, and, indeed, anything that coli bacteria can cause in bath water and drinking water.

Now they suddenly had the capability of demonstrating those poisonous substances quickly and easily, whereas measuring them previously had taken a long time and involved a great deal of effort.

The Limulus test was recognized internationally in 1976, but it was already in use at that time by Professor Viggo, of the Epidemic Department of the Rigshospital.

Tom Mikkelsen and his fellow-workers have king crabs living in salt-water aquariums there, and from them they get extracts which are used in analyses involving chemical detection.

#### Terror-Stricken Customs Officer

The king crabs come by air from the United States, from one of the laboratories in California where John Steinbeck's celebrated character "Doc" collected his marine animals. Tom Mikkelsen tells the story of a zealous customs officer in Kastrup who pulled back his hand with amazing rapidity when he saw the king crab, which resembles the crabs but belongs to the same genus as the scorpions.

Since archeologists found the tracks of king crabs in petrified strata from the past, they once believed that the slight impressions came from lizard-like birds. At present they are better informed, and they recognize the characteristic streaks as quickly as Tom Mikkelsen discloses the poisonous products of bacteria.

#### Preventive Effort

During the last 5 years, the test has been applied routinely to 1,500 patients at the Rigshospital. An amount of 0.1 milliliter of blood, urine or spinal marrow is drawn off. That is enough for a test which previously required much larger amounts.

The Limulus test can also be used preventively. One hears so many complaints of headache, nausea, sore muscles and fatigue on the job, doesn't one? That can be due to the growth of bacteria in the humidifying installation. Tom Mikkelsen has been able to demonstrate that in many of the pieces of apparatus which actually are supposed to insure that offices and industrial enterprises have fresh air! Similarly, he has demonstrated the presence of a quite large incidence of bacteria in cutting and lubricating oils which are used in workshops.

A provisional investigation of the drinking water in Copenhagen shows that the contamination level is no greater than healthy, adult humans can tolerate, but for weakened and especially susceptible individuals it is rather too high. Therefore, Tom Mikkelsen is now going to Norway to test the spring water.

Denmark's Aquarium can show king crabs now and then if anyone has a wish to see them during his life, and squirming examples of the king crab are also brought ashore in Danish fishing boats. Presumably the animals have been tossed overboard by foreign ships coming home from long voyages.



COPENHAGEN TO EMPHASIZE ENVIRONMENT IMPACT IN ROAD PLANS

Copenhagen BERLINGSKE TIDENDE in Danish 26 Mar 80 p 7

[Article by "Bitten": "Kilometers of Paths for the Pleasure of Cyclists; Less Money but Greater Safety in the 1980 Highways Plan"]

[Text] Increasing energy prices and economic stagnation mark the proposed highways plan which the County Administration of Copenhagen has sent to the municipalities for study. The 1980 Highways Plan replaces the 1976 Highways Plan. In contrast with previous plans, less weight is given to the capacity of the highways this time. Instead, the interest is focused on improving traffic safety on the existing roads and highways by building paths for cyclists, among other things. In some places, that can only be accomplished by discontinuing some existing roadways.

A number of quality requirements are set up in the 1980 Highways Plan. Here are some of them: the number of traffic lanes is to be adjusted in accordance with an overall evaluation of the needs of all users of the roads. In that same connection, consideration is to be given to where a stretch of road leads. There are to be paths for cyclists and sidewalks along the roads. Illumination of roads is to be dependent upon traffic intensity and location. New roads which are built in existing urban areas are to be screened against noise to the extent that is necessary. Planting is to take place along the roads (planting has already begun along county roads).

The amount of approximately 280 million kroner for construction work is included in the 1980 Highways Plan. Some of the new roads in the highways plan are projects which are to be carried out as a part of planning which has already been approved--for example, the completion of the Vallensbaek Torve road. Some of them are roads which will provide access to new urban areas which are a result of the first stage of the regional plan--Blekinge Boulevard and Sydvey in Hoje-Tastrup, for example.

Comments and proposed changes in the 1980 Highways Plan can be sent in to the County Administration of Copenhagen, Technical Administration Department, Naverland 2, 2600 Glostrup, before 1 July 1980. Copies of the highways plan can be ordered from the same address. They can also be ordered by calling 02-96 55 44.

When the hearing on the proposed plan is over, the comments which have come in will be evaluated. The final proposal in regard to the 1980 Highways Plan will then be worked out for the approval of the county council before the end of 1980.



## FINLAND

### ENVIRONMENT PROTECTION AGENCY LACKS POWER, POLICY

Helsinki SUOMEN KIVALEHTI in Finnish 14 Mar 80 pp 60-66

[Article by Leena Hayrinen: "The Environment Needs a Ministry"]

[Text] The value which society places on a clean, healthy, and comfortable environment is apparent from the level of laws and environmental control. Finland receives a poor rating. The organization of environmental control became mired down in a selfish pursuit of its own interests. Now things are occurring in the environment every day for which no one is responsible.

Our environment is something that affects all of us every day.

The deterioration of the environment must be prevented. Problems concerning the sufficiency and the use of natural resources must be resolved. Herein lies the two sides of environmental protection.

The environment means several things. When the planning and the supervision of the interaction between people and the environment are being contemplated, consideration must be given to the existing environment, which above all is the same as nature, but, of course, also includes man-made environment.

In addition to the existing environment, we must also look at the environment being created, that is, the environment that is being built and designed.

The goal is a clean, healthy, and comfortable environment and the protection of the sufficiency of natural resources.

Economic and social as well as cultural values must also be weighed when making solutions.

From the point of view of society there are two means and they are closely intertwined: administration and law.

Their position and level reflect the value society places on the environment. These two worlds of values encounter each other head-on in a discussion concerning them:

Can someone whose lifetime according to the Bible is 70 years or 80 at the most come and "own" a 10,000-year old esker and destroy it? Can he own the beauty, landscape, or history? Who owns the values which are contained in a traditional industrial milieu? Can one demand compensation for not damaging them?

Everyone is guilty.

Environmental protection cannot, however, hinder economic activity; man lives by using this space to his advantage and by cultivating it according to his needs.

Chairman Rauno Ruuhijarvi of the Finnish Environmental Protection League would like to make this point of view a subject of examination.

"All human activity -- centers of population, industry, and agriculture -- cause disturbances and the deterioration of the environment; there is no one single guilty party," states Ruuhijarvi.

"The goal of environmental protection is to minimize these disturbances, in connection with which I would like to point out that they also cause economic losses. Fertilizers are intended for fields and not waterways, waste could be used as a raw material, and substances which could be used to man's benefit are released into the atmosphere.

"In principle, the environment always suffers when an attempt is to minimize expenditures and to obtain the highest possible economic growth. The cost of unrenueable natural resources is always increasing. Compensation for this cannot be made interminably by taking more and more from the woods, for example.

"There are also areas of production whose disturbances to the environment are few. We should concentrate on them. A high level of refining frequently means that environmental harm can be reduced."

When a good relationship between economic activity and environmental values is sought, something must be given up.

"According to my observations the decisionmakers assume that the average person is not ready to sacrifice anything for improving the environment. My understanding is different," states Professor Ruuhijarvi.

"In making decisions an order of priority must be given to issues. Until now questions connected with income, social interest, taxes, and growth policy on the whole have always been placed before the environment. It is clear that there will always be a certain conflict between environmental protection and practice. Its resolution requires a political decision. And since only voluntary organizations speak on behalf of the environment, economic interest always wins out over protection.

"In thinking about economic viewpoints alternatives are seldom seen. When industry finds itself in difficulty, perhaps the only alternative will be to process the vast natural forest reserves of Lapland into cellulose as rapidly as possible."

#### Administration Disorganized

In 1972 the Diet approved a law proposal aimed at reforming the environmental protection administration. They were put into effect with the condition that the government accelerate plans for concentrating the most important environmental work in government administration into its own environmental protection ministry.

In the following year an environmental protection section was established in the Ministry of Internal Affairs.

As far as administration is concerned nothing really happened. The situation today is such that the management of environmental questions is disorganized: in one way or another each ministry has its own section to them.

Thus the official of the Council of State deals with coordination and planning of territorial planning policy. The Ministry of Internal Affairs plans and supervises land use and social structure, housing issues, the overall planning and supervision of environmental protection, protection of the atmosphere, noise abatement, waste management, and outdoor recreation.

The Ministry of Education is responsible for the protection of antiquities and buildings which are valuable from a cultural and historical point of view.

The jurisdiction of the Ministry of Agriculture and Forestry includes the protection of natural resources, water protection, the planning of water use, the management of sports fishing and hunting, the management of renewable natural resources, and surveying.

The Ministry of Transportation is responsible for landscape management and noise prevention in connection with the construction of highways, a study concerning protection of the atmosphere, and noise prevention.

The Social and Health Ministry concerns itself with environmental hygiene from the point of view of health care, labor safety, and poisons.

The Ministry of Trade and Industry concerns itself with the prevention of oil spills from freighters, supervision of general foodstuffs, the protection of sea water, noise prevention caused by small boats, the planning of the industrial use of natural resources, waste usage, and dangerous substances.

"This situation makes comprehensive planning and inspection difficult," states Professor Rauno Ruuhijarvi "the mutual dependency of issues cannot be seen, mutually conflicting plans are made in the various sectors."

Professor Ruuhijarvi cites an example: the well-known yeast dust problem at Aankoski came about in an attempt to protect the water. The yeast dust was inhaled into people's lungs at which time a worse situation arose.

"In other words, such matters should be taken care of from one place," he states.

#### Everyone of the Same Opinion

Questions touching upon environmental protection have been deliberated since the mid-1960's in committees and work groups, in which proposals were made with respect to organizing an administration.

In 1971 the Environmental Protection Organization Committee considered four models, which alternated from a central office to an expanded water administration and forms in between. Three years later the office of the Council of State established a work group for developing an environmental administration. This work group rejected the idea of a central office in its entirety and proposed the establishment of an environmental ministry.

The most important document of the 1970's was, however, a report of the parliamentary state central administration committee, which was completed just before Christmas of 1975.

The procedure of this committee was exceptional in that a separate political group of experts worked as a section of it in developing possibilities for carrying out the proposal of the committee. The committee as well as the experts were unanimous: for the purpose of environmental control a separate environmental ministry should be established to deal with formulation and structure, surveying and geodetic studies, environmental protection, protection of natural resources, the protection of water systems, and the supervision of their use with certain exceptions as well as radiation safety.

In the statement all the parties supported the establishment of an environmental ministry, including the Council of State and several ministries. However, the MTK [Agricultural Producers Association] and the Ministry of Agriculture and Forestry adopted an opposing stand already at that time.

At that time the organization of environmental control was felt to be an urgent and important goal, and concessions were made between the expensive ministerial conception of the leftwing and the narrower environmental protection goal of the center for the achievement of a political compromise: the Social Democrats, for example, were compelled to abandon the inclusion of a housing affairs section in the new ministry.

"The negotiations were diligent, and much tobacco, coffee, and bread were consumed," states Committee Chairman Seppo Salminen before reaching a unanimous conclusion.

## One's Own Environment

How is it possible that there is still no environmental ministry in the country?

The Finnish Environmental Protection League brought up the issue several times in the 1970's with concerned public statements, most recently in May of last year when a new government was formed in the country.

But when even the Social Democrats gave up on the idea of an environmental ministry in the government negotiations (the natural resources council and its chairmanship received the same reward), a certain fact became clear: the unanimity achieved in 1975 turned into an open conflict for political and administrative power.

If environmental questions were given the value they deserved in society, it would mean that a separate ministry would be responsible to the Diet for these issues. Now it must be said that the planning and responsible management of the environment was given secondary importance while the various interest groups mark off territories for themselves.

Who deals with environmental questions in Finland, has become a tournament between the Center Party and the Social Democrats. One controls the Ministry of Agriculture and Forestry, the other has more influence in the Ministry of Internal Affairs.

When the committee made its unanimous proposal, officials representing both parties became concerned about a reduction of power.

Many fears and passions were reflected in the discussion concerning environmental controls. The decreasing support of the Center Party from election to election could be seen in the background, but the innermost question of protecting one's possessions was also difficult and urgent.

"It is true that we are concerned with this question," admits MTK Managing Director Matti Uusitalo. "Agriculture is based on family farms and thus on ownership. Management of the environment has, on the whole, meant restrictive actions and farmers consider them to be a threat to their livelihood. Experiences with respective bureaucracy are negative. And finally in environmental questions everyone else is secondary: only the farmer has his own cow in the ditch."

The Ministry of Agriculture and Forestry adopted a stance by which a new committee was to be established for discussing environmental control.

And in October 1978 Agriculture and Forestry Minister Johannes Virolainen stated three years after the unanimous committee report: "In the 1960's and the 1970's there was a dire need for the ministry in question, but the situation has now changed." And later: "The Center Party will not approve the establishment of an environmental ministry."



He stated that the cow in the ditch can also be turned around.

Also the Conservative Party stated: In writing his report in the spring of last year Kimmo Kajaste, a member of the environmental protection council representing the Conservative Party, swept away any fears about the establishment of any extensive controls and gave the assurance that the goal of the Conservative Party is "a restricted ministry".

#### Conditions Exist

This is the situation: The organization of environmental control seems to be very expensive even though at the same time the establishment of new provinces complete with administration is being contemplated. It seems that this will increase bureaucracy even though it is expected to be a collective reorganization of existing units. It is said that it would free issues from normal ties in a fateful manner.

Professor Erkki Hollo, an expert in environmental rights, talks about the above-mentioned subject:

"Environmental questions relate to all aspects of human life. There must be contacts between the various areas, but environmental control should nevertheless be a functional totality, independent, but not so isolated that it would be blind to other things that are going on in society."

Seppo Salminen, for his part, states that the fate of the committee report requires much work:

"It is tragic that such an important question remains unresolved. I have been convinced that the level of our political decisionmaking is not sufficient for making difficult decisions. When a difficult question arises, everyone encloses themselves behind their position and nothing gets through."

Those who believe that their thinking about environmental issues, for example, faithfully adhere to party lines will soon discover they have made a mistake. Seppo Salminen points out that in every party, for example, there are those who oppose nuclear power. The question of what is to be considered socially important will have to be reexamined in many quarters in the 1980's.

"Now is the time to move forward," says Erkki Hollo. "Inflexibility, an excessive protection of one's own position, a desire to avoid change, and bureaucratic fear have brought the situation to a halt. However, relevant and formal conditions for the organization of environmental control do exist."

Professor Hollo refers to another aspect in this matter: supervision of the use of the environment needs timely and material legislative support: so-called pollution questions and the use of natural resources and, on the other hand, the management of nature and recreational use should be legislated by law.

But a significant cluster of laws concerning the environment await discussion at various stages of preparation. If someone fears environmental control, he has an awareness of the labyrinth complexity of this issue: laws cannot be enacted when there is no administration, and an administration cannot be established when there are no laws...

And the third pretext: laws cannot be made when there is no information.

"The fact that there has been some progress in the 1970's in the form of decisions and positions is primarily due to industry," states Section Chief Olli Ojala of the Environmental Protection Section of the Ministry of Internal Affairs. "In industrial circles there has been an awareness that these issues will in any event arise sooner or later."

#### Hope Keeps a Poor Man Alive

The halt to the development of an environmental administration and environmental laws has been the so-called eternal question in Finland for a long time.

The environmental protection organizations are once again preparing for an appearance in the Diet. Since the establishment of an administration seems to be nearly a hopeless goal, a concentrated effort is now being made on the intermediate level, provincial and municipal governments, to move into action.

In this connection many people cite the history of the Nousiainen Council of State, in which it is said that the passing of important issues was, in general, credited to the person of the prime minister. Others refer to the Ministry of Internal Affairs, which has rectified itself by referring to the compromise initiative made by office chief Arno Hannus: Let us establish a ministry for housing and the environment and develop environmental protective activities in the Ministry of Agriculture and Forestry.

According to Hannus his proposal does not even correspond totally with his own opinion. The proposal has been said to be vague. All the elements for conflict remain: the conservation of nature would remain separate from the rest of environmental controls, among other things. The satisfaction which this proposal has aroused can be placed in the class of "at least something": hope keeps a poor man alive.

But Arno Hannus is also clearly of this opinion: "The country must have environmental controls organized at the ministerial level."

As long as this does not exist, inconsistency and duplicate and conflicting decisions, for which no one will be clearly responsible, will continue. It may happen that our beloved fatherland will be inherited by the next generation in a poorer condition and all those who come after us will suffer from the sins of their fathers.

Perhaps the fathers themselves will not enter the kingdom of heaven.



ENVIRONMENTAL DESTRUCTION IN SOUTH LAPLAND HURTS REINDEER

Helsinki SUOMEN KUVALEHTI in Finnish 14 Mar 80 pp 18, 19

[Article by Terho Kunnari: "Environment Under Control, Reindeer Free"]

[Text] Once again the interests of the reindeer herdsman and the farmers have come into conflict in South Lapland.

Reindeer have been given legal protection for the purpose of increasing and fulfilling production quotas, but there are no guarantees concerning the sufficiency of pastureland, not to mention quality.

It is evident that the migration of wild reindeer to the west is the result of land clearing being carried out on the Soviet side of the border. Even though the number of reindeer living in the wild in border areas not used for reindeer herding is only a few thousand head, their pursuit of lichen is a condition of existence.

When the deer become disturbed, they may freely move from one place to another but in a relatively larger group. In South Lapland the reindeer herds cannot move. It must remain in the area belonging to the reindeer-owners' associations. The dearth of lichen caused by the thorough clearing of forests and overpasturing, has left the reindeer to get by on a limited and unhealthy source of nourishment. After the rabbits and elk have foraged for their share of nourishment, there is nothing left for the reindeer. Its very existence in the wintertime is dependent on a sufficient amount of substitute nourishment suitable for it.

The lack of nourishment is becoming ever more clearly connected with the expansion of the farming population. It is hardly beneficial to the reindeer economy that it is slowly but surely being labeled as a parasitic livelihood.

In the wintertime starving deer easily become the victims of predatory animals and this, for its part, has resulted in unreasonable and even terrorist acts against predatory animals. Conservationists have with justification begun to ask where is the limit of domination with respect to nature's own laws.

## Reindeer Are Adrift with the Wind

Reindeer herds are the only livestock which do not need to be tended or enclosed. This advantage is utilized to the fullest degree. The exemptions granted by current law have resulted in less supervision, avaricious over-pasturing, and in repeated emergency situations nearly every winter. The number of reindeer has almost doubled even though the ability of pastures to support them has fallen off drastically due to land clearing.

The reindeer behave according to accustomed grazing patterns. This means that it would rather graze in those areas where lichen was available before. Even when it is hungry, it would prefer not to come down to the lush river valleys or become a hindrance to the farming population.

Those farmers whose land and forests lie in the path of the reindeer herds are the ones who find themselves in the most difficult situation. They make up that large group of experts whose opinion was not asked when the reindeer laws were enacted.

A farmer who ends up feeding someone else's livestock due to certain laws does not feel that he belongs to a democratic society. He begins to demand his rights.

## Production at the Expense of Someone Else's Production

The law has placed farmers in the forest areas of Lapland in an unequal position compared to farmers in southern Finland since reindeer have the right to graze on private property, it has become a decisive obstacle to the diversified use of farmland. For example, crop cultivation, vegetable farming, birch tree cultivation, and the collecting of lichen make up the priorities of the southern farmer in addition to more advantageous conditions.

The territorial and economic significance of reindeer herding is placed in a strange light when one compares the meat production of reindeer, which are prevalent in nearly half of Finland, and the country's best game animal, elk, with each other. Professional reindeer herding produces only one-fifth of the meat produced compared with elk. A bad year can somehow be understood because of the poor production-properties of reindeer, but it is difficult to understand that the yield from Lapland is so little at the expense of other more intensive indigenous production.

## The Norwegian Model

The new reindeer law envisages, among other things, the establishment of new grazing lands in the vicinity of Kemi and Oulu and in addition to this, the intent is to expand the base of rights with respect to reindeer herding. The previously mentioned proposal is most likely only a smokescreen for the implementation of other proposals. An interesting idea, instead, would be to implement the right for all Finnish citizens to cultivate reindeer, but place it in the same category as other normal livestock. The right of

reindeer to graze wherever they want as a legislated peculiarity would be eliminated.

The idea of the regulated herding of reindeer within the framework of a strict alternating pattern of grazing was brought up publicly several years ago already in the northernmost part of Lapland. According to the experimental model obtained from Norway, the present grazing areas would be sufficient for a reindeer herd even twice as large. When northern Lapland is ready for an unconditional system of alternating grazing land, which is also apparently a fact of the near future, the question will arise as to why the right of reindeer to run free in southern Lapland should be continued.

The answer is most likely to be found in the recent statement of the Lapp committee issued to the governor of the area. It states that the population making a livelihood from nature is governed from the south. This means that factors other than Lapp interests will affect the content of a stronger and new reindeer law. The elimination of exemptions for reindeer would give the Lapps an excessive advantage in production expenditures. This is undeniably so, but the solution presented by the Lapps themselves should be examined from all aspects all the way to the end.

#### Herding

- makes fences unnecessary
- protects livestock from predators
- prevents damage by reindeer to cultivated areas
- will improve traffic safety
- will keep livestock away from contaminated areas
- will ensure the definite growth of meat production
- will restore farmers the right to use their land in a diversified manner
- will eliminate the need to oppose the healthy development of the mining industry, highway network, tourism, and the general use of free time
- can be accomplished easily with modern means of transportation such as snowmobiles, for example.

There is reason to emphasize that the exceptionally large losses incurred in open grazing areas would fall off to a minimum as a result of herding. This would be the case with respect to the high mortality rate among fawns. It is also evident that herding would bring considerable savings in expenditures to the state.

In Finland the separation of the realization and the supervision of a law has always been considered to be important. In evaluating reindeer accidents the reindeer owners themselves have, however, been the judges. It is not until the first grievance level, however, that it is possible to obtain an impartial statement. The difficulty of finding a venue of justice, an unsympathetic attitude, and the obsolescence of evidence have effectively worked against the party who has suffered damage. Herding would also automatically rectify even this injustice.

A reindeer herd under continued watch becomes accustomed to its herdsman, behaves peacefully, and does not become subject to stress even during culling. The control and treatment of frightened animals is rather violent, time consuming, and even reduces the quality of the meat.

A livestock grower who herds with a gun in his hand instead of tending to his flock is a startling extreme phenomena in the historical development of herding. The unreasonable amount of time and energy which the reindeer men use in the exaggerated prevention of harm to their livestock is not in a reasonable proportion to the minimally intensive work of herding.

Inasmuch as the freedom of people and not of reindeer is, however, more strictly limited in the new law, the situation will be especially regrettable. The desolation of the Lapp countryside is the result of the sum of many negative factors. The reindeer is not the least of these factors.

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VOLCANIC ERUPTIONS, EARTHQUAKES EXPECTED TO CONTINUE

Stockholm DAGENS NYHETER in Swedish 18 Mar 80 p 8

[Article by DAGENS NYHETER correspondent Njordur Njardvik: "Iceland: Warning of New Quakes and Eruptions"]

[Text] Reykavik, Monday. Volcanic activity on Iceland which caused several earthquakes and a volcanic eruption had subsided on Monday. The thin lava which spread over large areas after the eruption north of Myvatn has not caused any damage to buildings in the area.

The eruption was discovered when a pillar of smoke 3 kilometer tall rose toward the sky. A thin lava spread at a speed of about 40 kilometers per hour. The speed was estimated by geologist Eysteinn Tryggvason, who was doing surveying in the district and who had to flee precipitously on a motorized sleigh in order to get away from the lava.

Sunday afternoon a 3 kilometer long volcanic crevice opened north of the volcano Leirhnjukur, which had a powerful eruption in December of 1975. The crevice is situated just 3 kilometers north of the Krafla powerplant which has been threatened by volcanic activity many times during the past few years. Since the lava flow omitting from the crevice went toward the northwest the powerplant escaped once more. Houses in Myvatn were not affected either. Even if the population in the area could take a deep breath on the Monday after a dramatic Sunday the danger is not quite past. The local civil defense has given orders of increased preparedness in the face of new eruptions and earthquakes.

For many years magma (flowing molten rock, the innards of the earth) has moved back and forth in a north-south direction with earthquakes, earth displacement and smaller eruptions as a result. During Sunday's eruption the magma forced its way south again, and with this, volcanic activity has decreased, at least for the time being.

Similar events took place continuously in the same district for almost 5 years--from 1725 to 1729. What has happened now is reminiscent of the eruptions during this period.



[Caption] It is in the district around Iceland's second largest lake, Mytvatn ("mosquito water") that a volcanic eruption and several minor earthquakes have occurred recently. In the danger zone are, among others, the earth heating plant in Kefla, which this time escaped being buried by flowing lava.

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## ENVIRONMENTAL AGENCY TO TAKE ACTION AGAINST SNOWMOBILES

Stockholm DAGENS NYHETER in Swedish 1 Mar 80 p 28

[Article by Ake Lidzell: "Alcohol, Negligence, and Mischief. Sharp Criticism Weeds Out Snowmobile Operators"]

[Text] The violent criticism against misuse of snowmobiles is starting to show results. Among measures that are being discussed are import bans on snowmobiles with the strongest engines, speed limits of 30-50 kilometers an hour, investment in snowmobile clubs and training for operators that will be ready shortly. Furthermore a tax on snowmobiles should contribute to society's costs.

"We want to have speed limits of 30-50 kilometers an hour. Today most snowmobiles go faster than 100 kilometers an hour," says department head Torsten Larsson of the environmental agency.

The biggest problem with the snowmobile traffic is that many people operate their machines under the influence of alcohol. The accidents are increasing heavily and a team of physicians has, in an investigation, shown that out of 22 fatal accidents with snowmobiles, 19 occurred after alcohol consumption.

### Alcohol Contributes

"Drunk driving is much too common," agrees Nils G. Lundh, president of Harjedalens environmental association. "In certain areas and at certain times it's almost the rule for snowmobile operators to be drunk, especially in certain fishing districts where supervision is poor," he says in a sharp attack against inconsiderate driving.

Today there are 70,000 registered snowmobiles in this country. They can drive around freely in recreational areas with the exception of certain mountain areas where the government has issued a snowmobile ban. There traffic is only allowed on special snowmobile routes which local authorities have participated in planning.



## Money Is Lacking

But since money is lacking for making snowmobile routes, they frequently cannot function as has been intended. This also contributes to snowmobile drivers entering forbidden areas.

In addition to snowmobile bans on for example reindeer grazing land communities, demarcate territory around densely populated areas where snowmobile traffic is banned.

"Those problems are the greatest," says Torsten Larsson. "People even drive in the streets even though they may be fined. From the point of view of the environmental protection agency we can speak out in favor of three measures primarily:

"Stop the development towards fast snowmobiles. Engines that used to be in sport snowmobiles are now standard.

"Limit speed to 30-50 kilometers an hour

"Give future snowmobile operators better information. Some type of driver training is needed."

## Skiers Endangered

"Most ordinary skiers move in the territory around densely populated areas which are also popular with snowmobiles," says Nils G. Lundh. "It's not unusual for snowmobiles to hit skiers in the tracks with severe accidents as a result.

"But in recreational areas people really ought to have the right to escape engine noise, gasoline fumes and the risk of being run over."

Snowmobile traffic is also a threat to game in mountain areas and in the forest, according to Nils Lundh.

"Even if the snowmobile drivers only want to take pictures they can do great damage if they drive close and disturb the animals. If you scare a ptarmigan a couple of times in 25-30 degrees below Celsius, she can freeze to death. She's sitting down in the snow to keep warm."

## Negligent Tourists

Mischievous traffic is consequently a big problem for reindeer management. The local population knows how to avoid disturbing the reindeer, but the tourists are careless.

"I've seen snowmobile tourists drive side by side, dividing my reindeer herd in two," says Mattias Mattsson, president of Kall Lapp village.

"The most sensitive period is now when the cows are in calf and it happens to coincide with the most intense snowmobile traffic. They should not be allowed to drive faster than 30 kolometers an hour. Neither they nor we need higher speeds."

At present speeds snowmobiles are dangerous vehicles. Mats Bauer and Anders Hemborg, physicians in Ostersund, show in a report that the number of persons injured per thousand vehicles was 28.24 for motorbikes, 17.70 for snowmobiles, 5.26 for automobiles, and 4.45 for mopeds.

Of 117 injured in Jamtland one year 49 were in the 16-25 age group.

#### No Knowledge

The two physicians state that the drivers had had insufficient knowledge about their vehicles and driving techniques and that they most often lacked elementary equipment for mountain travel, as for example skis, shovels, and bandages.

The snowmobile industry, which turns over 200 million kronor a year in Sweden, understands the critique against abuse.

"The communications department has asked us to stop importing snowmobiles with the strongest engines," says Magnus Fritzell, vice president of SNOFO, Sweden's snow vehicle distributors.

"Snowmobile routes with traffic in both directions could have speed limits of 50 kilometers an hour. Then you might allow 90 kilometers on great expanses, but higher speeds should not be allowed."

At races speeds of 150 kilometers an hour may occur.

#### New Conditions

"We would also like to see a tax on snowmobiles, like on cars, but then the money should return to snowmobile traffic in the form of for example snowmobile routes and driver training. In the United States and in Canada there is a type of driver certificate issued by snowmobile clubs."

SNOFED, the Swedish federation of snowmobiles, is also working in this direction.

"This spring we will have a 20 hour course for snowmobile drivers ready. It will be connected with the school of adult education," says Tage Magnusson, general secretary of SNOFED, which has been active for a little more than a year.

"Then the snowmobile clubs around the country will have to arrange study circles."

The only problem is to get all the clubs into the national organization. It's known that there are 60-70 clubs, but so far only 37 have joined SNOFED, 11,500 members. It's a good start, anyway.

SWEDEN

AGRICULTURE UNIVERSITY PROFESSOR: STOP FOREST PESTICIDES

Stockholm DAGENS NYHETER in Swedish 6 Mar 80 p 64

[Article by Karl Erik Lagerlof: "Forestry Professor About Poisons: 'I Would Never Use Pesticides If I had the Responsibility for a Forest'"]

[Text] Some 300,000 hectares of forest are being cut down in Sweden annually. Of those about 17,000 hectares are being sprayed with pesticides. This is only 1.1 of the total forest acreage in the years when spraying is heaviest.

What would it cost if spraying were stopped? In socio-economic terms it's free, says Lars Kardell, professor at Lantbruksuniversitetet [agricultural university] and one of those interviewed in this article about the Swedish forest in the series "A Chance For Life."

In Varmland where I grew up we had a beautiful forest within reach of a Sunday walk. Below the precipice at Trollhalsberget was the Hepatica Pine, gigantic, at least 200 years old. And below the Hepatica Pine there was a valley where a clear brook ran in the gloom, under the spruces in a meandering furrow. The spruces here were so imposing and so straight that the forest would be experienced as a high-ceilinged wall. Wandering in this forest was like being a guest in a fairy tale.

Last summer I walked across the place where the forest had been. The scrubby battleground that remained in the wake of the machines gave me the felling of being undressed and degraded myself.

Irrational thoughts! Who owns the forest? Not my feeling, at any rate.

Only the person who owns the forest as raw material has the right to call it his.

You live close to a forest your whole life, you grow up with it, you pick berries and mushrooms in it, always take your walks there and call it "my forest." To you the forest is a room and a friend: it seems to answer your questions and you cannot deny that its sighing trees possess wisdom.

But nothing of all this gives you any right in the forest. The feeling that this would be natural explains the tremendous bitterness which characterizes reactions in many quarters. Strangers, on the other hand, have the right to walk into "this home environment" and totally destroy it. The secure customs of decent society comes into frank collision with the capitalism which still constitutes a constructive part of our community. You are surprised. But you shouldn't be. What the forest is is dependent on the government's view of society. The same thing with energy and risk taking. Either you have an energy policy which refuses to take irrevocable risks or else you don't.

### Not Lift a Finger

On a cold and snowy day Lars Emmelin and I go to visit Lars Kardell in Garpenberg, the outpost of Skoghogskolan close to Avesta in southern Dalarna. Kardell is a professor at the agricultural university. "There is a strong connection between us forest scientists and forestry," he confessed self-critically. "The farmers haven't been able to afford a forestry officer. Consequently there has been no collaboration between the farmers' forestry and the educational institutions for foresters and forestry scientists. But as a professor at Skoghogskolan I have a number of old school mates and close friends who are now forestry managers in the big concerns. There's the connection."

"And those are the ones who sit on councils and boards," says Emmelin.

"Exactly," says Kardell, "they are the ones who distribute research money. It's true that lately farmers have gotten into the game through the forest owners' association. But this has not resulted in new and different demands on us. The forest owners' associations haven't lifted a finger to develop an alternative technology or strategy; they've simply taken large-scale operation to their hearts.

"The farmers have been built into the large-scale operations systems?"

"That's it. However, the lot boundaries have made an agreeable difference. It hasn't been possible to cut quite so hard over large areas. You have to be very grateful for the lot boundaries if you're concerned about ecology."

We spoke for a long time about the 1969 storm, which meant a catastrophic devastation in several parts of the country and which led to severe attacks of spruce bore and heartwood bore in many places, perhaps primarily the Klaralv valley in Varmland. Lars Kardell has a whole slew of views concerning cause and effect.

"The horse was replaced by the tractor in the mid-sixties. We had tremendously fast technological expansion during those years. The new technology demanded larger cuttings. Not least important was the fact that tougher culling of the forest took place, the maximum allowed was cut.

Because of this the wind found more open places to play in. In 1969 the forest was more unprotected against storms than before. The technology also contributed to the great extent of the damage.

Then the trees felled by the storm were not removed from the forest, at least not nearly to the extent that would have been necessary to avoid the dead tree limbs breeding places for destructive insects."

"Why have the forest owners that neglected to do the right thing not been prosecuted," I ask. "In 1969 it was very well known that we would be subject to severe insect attacks if the timber were let lie."

"As early as 1947 the whole beetle complex was understood. I have also asked myself where prosecution wouldn't be possible. But earlier there were no clear legal provisos to support such an action. Now there are laws to cover just such instances."

All To Ljusdal

"You were speaking of 'procedure concentration.'"

"Yes, when you had horses it wasn't so difficult to take care of a single tree. I remember myself when I was cutting in the fifties. Then you had to go out when a tree had blown over, drive out with the horse and cut up the timber and take it out of the forest. From the point of view of forest hygiene, there was very fine forest care at that time."

"There were people moving in the forest who knew. . ."

"Yes, they knew what was happening. Then procedure concentration was introduced. You work one area at a time, and there's so-called functional staff distribution. One person has responsibility for the machines, another for the seedlings, a third for the roads and so on. Nobody has a geographical overview.

"As late as the early sixties there was 'individual' forest care," he continues. "There was a guy with forestry training on the spot who had a thousand hectares in his district where he was more or less king. He had the responsibility for the people and for planning the work, for snow removal, for damaged trees being removed, and so on. He also watched over hunting and fishing--he knew his area, it was his garden so to speak.

"Then you take--largely speaking--all those guys and move them to Ljusdal and then they commute once a week to Farila or wherever they are going and then they look after the forest there."

Lars Kardell is careful to point out that what he has just said applies to the large-scale operations which the big companies are responsible for. At



the same time, however, he seems prepared to accept the technology which has resulted in large-scale operations. He does not believe in selective cutting--picking off the trees as they reach maturity--but he does not reject it categorically. Selective cutting has not been scientifically studied, he maintains. We don't have sufficient basis for condemning it completely. What we know is that the big practical tries made in 1920-1950 gave lower yield.

Only refrain!

For him, he says, long-range productivity is the most important. He cannot accept measures that reduce the productivity of the land. Forestry is one of the cornerstones of our economy, we have to make sure that this raw material will be available in future too.

On two points he is wary. For one thing he can't accept big clean-cuttings close to the northern mountain ranges--over all, he wants smaller clean-cuttings. For another, he worries about what effect "chemical loading" may have on the forest and its productivity on the long run.

"I would never use pesticides if I had the responsibility for a forest. It's only a question of ten percent of the yearly renewal that's in question. Admit that this is not reason enough to turn everything topsy-turvy. It's only a question of refraining from this practice, the problem is no longer than that."

"How much would it cost if the practice were stopped?"

"In socio-economic terms it's free."

"Shouldn't you do anything at all?"

"Of course, you'd have to clear--if you want to concentrate on conifer development. Another way is to view leaf remains as a resource. Undeniably, there's a big energy production concerned in this matter."

#### Traces After 10 Years

Lars Kardell's lodestar, "good productivity in the long run," does not force him to go radically against large-scale operation. During the present--difficult--fall heavy machinery has made deep ruts in 20 percent of the cutting areas. He has himself done research on the "compacting" of the ground caused by forest machinery. He says that after 10 years it is still possible to see that the ground has been more compacted where the machinery has travelled across it. However, he considers the results to be "negligible."

In his balancing act between economy and ecology Kardell considers that ethical motives should be considered as well. Other species may have the



same right to live as we do. This right should be preserved by the creation of nature preserves. Today we have 16 state parks of a combined area of 621,000 hectares, and we have a bit more than 1,500 wild life preserves with the same area where we can carry out competent environmental protection.

"It's an apartheid policy, that has to be admitted, but it's one way for us to get out of this dilemma. We can't provide optimum conditions for everyone, because then we won't survive ourselves."

After lunch we walked across to see professor Per Olov Nilsson, who is sitting in the same building in Garpenberg and who is engaged on a project of extracting energy from what the forest industry has traditionally left behind in the forest: stumps and twigs.

"If you take a third of the approximately 50 million cubic meters of forest remains which are left in the forest, you could use it to cover 5-10 percent of total energy needs," says Nilsson. That's between a fourth and half of the energy that is needed to heat private homes.

"How large must the cuttings be to make the extraction profitable?"

"Ideally the size would be between 5 and 25 hectares."

"This helps large-scale operations in the forest?"

"Yes, it does, above all for the kinds of companies that are able to benefit from the advantages large-scale operation. However, 50 percent of the lots are owned by farmers, and they have a completely different form of forestry care, so there I think areas that are a lot smaller may be used."

"What does this mean for employment opportunities in forestry?"

"There would be an annual addition of about 10,000 forestry jobs."

"Are there already machines that can remove stumps like these?"

"Yes, there are."

"In mass production?"

"Yes."

Dry and meager areas will be spared this kind of forestry. It is not considered that they will be able to take the additional strain that this would signify. But how will the forest as environment be able to cope with extraction where huge machines over large areas take all the stumps and tear the ground up violently? How will for example the lingonberry stands and the blueberries sustain this?

## Absurd Ban

We directed this question to Professor Carl Olof Tamm the next day. He was more disturbed than Kardell about large-scale operations in the forest. Large-scale operation had, he considered, too many negative effects on the forest ecology and on the forest as a recreational resource and for picking berries. He thought it absurd that the new forest care law categorically bans selective cutting.

Tamm did not consider that clean-cutting should be stopped. That way of caring for the forest has ancient traditions in Sweden, above all in Bergslagen where forests were cared for as a resource for charcoal making and iron working during the 17th and 18th centuries and where the clean-cutting method has not destroyed the forest at all.

But this occurred on a small scale. There were areas of one hectare and perhaps smaller that were cut, and this caused a great deal of variety in the landscape. All ages of trees were represented, there were always refuges for plants and animals that were not comfortable with one stage or another.

"The preserves," he continues, "have to be sizable areas. "This is particularly true if you want to preserve higher fauna: the larger animals need very large areas. Even an area like Serengeti, one of the world's largest preserves, is on the small side. The seasonal--unavoidable--wanderings of the animals cover such large areas. During their long wanderings, some species have to have a connecting row of areas where they can feed. Disturbing this system becomes a very sensitive matter.

"Even our migratory birds are threatened by the environmental changes that happen to their flight passages southward or northward," he continues. "It's difficult to see how it would be possible to discontinue increased mechanization in Sweden and the pattern of a strictly economy-oriented attitude which is the lodestar not just of the companies but also of the state and the various organizations. While we wait for these things to change, very large areas ought to be set aside as preserves.

"On some types of preserves exploitation of the area might be used in a more traditional way. Here in Sweden I'd be very happy if forestry was conducted the way it was until 1950. It would be possible to let some forest areas get so old that they would be suitable habitats for organisms that only like an old forest--there are several, wood-grouse, woodpeckers, and many insects."

Finally we asked Tamm what he thought of the phosphorus fallout and the increasing acidity. Did these things make the forest grow more slowly? He then described research that he had participated in and which has shown that if a stand of pines is manured with phosphorus acid it grows faster. But

he did not consider that this would be a long-range result of the phosphorous fall-out. The experiments continue.

#### Energy Forest

A week later I called Professor Gustaf Siren at Skoghogskolan and asked how far he would have gotten with his energy forests in the year 2,000.

"In the year 2,000" said Gustaf Siren, "so much heating energy can be extracted from the planted energy forest that it can replace a third of today's oil consumption."

If Per Olof Nilsson gives us half of the oil consumption and Siren one-third --then 80 percent of today's oil needs would be covered by wood at the turn of the century. And then we haven't taken peat, algae, reeds, solar energy, wind power, and straw into account.

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